

A Revisional Catalogue of the genus *Ypthima* HÜBNER (Lepidoptera : Satyridae) from Vietnam

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ABSTRACT — The 24 *Ypthima* species known to occur in Vietnam are considered, of which 12 are new national records. One new species is described (in the *pandocus*-group), one new name proposed, and the status of three taxa revised.

KEY WORDS: Taxonomy, Lepidoptera, Satyridae, *Ypthima*, Vietnam.

INTRODUCTION

The genus *Ypthima* HÜBNER comprising more than 100 species is mostly distributed in Palaetropical regions and in the eastern Palaearctic region. The highest *Ypthima* diversity is known from western China, including Yunnan and Sichuan provinces and from other adjacent countries such as N.E. India, Nepal, Sikkim, Assam, Bhutan, Burma, Thailand including regions of the Indo-Chinese Peninsula, in particularly Laos and Vietnam.

However, until recently the data on the *Ypthima* fauna from Indo-China were rather poor and controversial. In the first serious work, on the taxonomy and biogeography of this genus (ELWES & EDWARDS, 1893) there are no *Ypthima* species listed from French Indo-China. There are some specimens of *Y. baldus*, *Y. huebneri* and *Y. multistriata* (= *imitans*) in BMNH and in MNHN, which were collected in Vietnam in the second half of 19th and at the beginning of the 20th centuries, although they were not mentioned in the former publication.

In 1911, H. FRUHSTORFER published descriptions of new races of *Y. asterope* (= *norma*) and *Y. savara* from south Annam and Tonkin and soon DUBOIS and VITALIS DE SALVAZA (1921, 1924) reported five species from central and northern Vietnam. Further information can be found in the catalog published by GAEDE (1931) and in the list by R. METAYE (1957) ; however, both were mostly based on previous works. Rich material, including new taxa and new records, was collected by METAYE in the 60s and 70s from the south of Vietnam. However, only material deposited in the MNHN was documented. The results were not otherwise published and new taxa were not described. Short lists of

Ypthima are contained in a few more recent papers (Anonymous, 1976, 1981), published in Vietnamese and confined to North Vietnam. Amongst six species reported in these works, *Y. lycus* and *Y. conjuncta* were mentioned for the first time.

The numerous descriptions and revisions of FRUHSTORFER (1911), EVANS (1932), TALBOT (1947), FORSTER (1948), ELIOT (1967), and CANTLIE and NORMAN (1959) were considered in the fundamental work by SHIRÔZU and SHIMA (1979) on systematic study of the genus *Ypthima*. The authors examined the morphological structure, such as male foreleg, wing venation, wing patterns, androconia and male and female genitalia of the 53 described species, mostly belonging to the Asian fauna. In this monograph, there are seven *Ypthima* species mentioned from Vietnam (added *philomela* and *inouei*).

During recent years (1990-2000), *Ypthima* have been intensively collected in different sites of Vietnam by researchers from Vietnam-Russia Tropical Centre and by volunteers of Frontier-Vietnam. Examination of this material resulted in the description of new taxa (UÉMURA & MONASTYRSKII, 2000). Also, interesting material, including a new taxon, was found in the MNHN.

The main objectives of the present study are to summarize and assess collection and literature data on *Ypthima* species in Vietnam ; to understand the biogeographical position of this group of species in Vietnam with regard to the regional fauna ; and to describe new taxa recently discovered by recent collecting and in museum collections.

The main vegetation types of collecting localities

N. Vietnam (Tonkin)

Hoang Lien Son Nature Reserve, Lao Cai province (22°09'-24' N ; 103°47' -59' E), including Sa Pa settlement.

The forest belongs to three types: submontane dry evergreen forest, tropical montane deciduous forest and sub-alpine forest. In addition, scrub land and savanna areas are found on ridge tops. The dwarf bamboo habitats are confined to the highest ridges of the Fan Si Pan massif, at the altitudes above 2,800m.

Tam Dao National Park, Vinh Phu province (21°30' N ; 105°40' E).

A small mountain range (19,000 ha) reaching over 1,200m above sea level, and covered by mountain rain forest, surrounded by deforested areas and paddy fields ; floristically very rich, without any conspicuously dominant tree species.

Cuc Phuong National Park, Ninh Binh province (20°14' -24' N ; 105°29' -44' E).

The vegetation seems to be close to typical lowland tropical forest on limestone with the typical five-storey structure not influenced much by man.

Ba Vi National Park, Ha Tay province (20°01' ; 21°07' N ; 105°18' -25' E).

A semi-mountainous area, mostly covered with lowland (<400) and low montane (400-1,200m) broad-leaved evergreen forests.

Ba Be National Park, Bac Can province (22°23' N ; 105°37' E) and Na Hang Nature Reserve, Tuyen Quang province (22°16' -31' N ; 105°22' -29' E).

The forest can be classified into two main types : *Strobilus* / *Burretiodendron* forest on steep, rocky limestone slopes, and mixed lowland rain forest on deeper soils. The second type is characterized by a diverse ground flora, including herbs and palms.

Cat Ba National Park, Hai Phong province (20°54' -20°51' N ; 106°45' -106°58' E).

The main natural vegetation type is limestone forest. It has been subjected to high levels of disturbance and large areas have been replaced by limestone scrub or bare rock. There are some areas of mangrove along the shore of Cat Ba Island. The National Park ranges in elevation from sea level to 300m.

C. Vietnam (Annam)

Xuan Lien Proposed Nature Reserve, Thanh Hoa prov-

ince (19°52' -20°02' N ; 105°58' -105°15' E).

There are four main forest types : lower montane mixed coniferous and broadleaf evergreen forest (above 800m) ; lowland evergreen forest (below 800m) ; regenerating forest and mixed bamboo and timber forest.

Ben En National Park, Thanh Hoa province (19°30' -19°40' N ; 105°21' -35' E).

Surviving areas of lowland forest which is characterized by small, shade-intolerant trees and a dense undergrowth dominated by bamboo.

Pu Mat Nature Reserve (18°50' -19°10' N ; 104°20' -55' E) ; Bu Huong Nature Reserve (19°15' -30' N ; 104°45' -105°00' E), Pu Hoat Nature Reserve (all Nghe An province).

Mostly lowland evergreen rain forests and deciduous and semi-deciduous monsoon forests, the vegetation type being dependent on annual rainfall in the site.

Vu Quang Nature Reserve, Ha Tinh province (18°18' -20' N ; 105°45' -50' E).

Lower montane evergreen forest and deciduous and semi-deciduous monsoon forest, the vegetation type being dependent on annual rainfall in the site.

Phong Dien Proposed Nature Reserve, Thua Thien Hue province (16°18' -35' N ; 107°03' -21' E) ; Da Krong Proposed Nature Reserve, Quang Tri province (16°23' -42' N ; 106°53' -09' E).

Lowland evergreen forest at ridges of low mountains, which extends south-east from the Annamite mountains. Both protected areas support the largest remaining territory of lowland forest in central Vietnam.

Bach Ma National Park, Thua Thien Hue province (16°05' -16' N ; 107°43' -108°12' E) ; Ba Na Nature Reserve, Quang Nam province (15°57' -16°03' E ; 107°57' -108°03' E).

Vegetation dominated by different types of seasonal evergreen rain forest, depending on altitude.

Song Thanh Nature Reserve, Quang Nam province (15°13' -41' N ; 107°21' -50' E).

The vegetation is dominated by evergreen forest : forest land covers 95% of the nature reserve. The topography is mountainous with numerous peaks over 1,000 m.

Ngoc Linh Nature Reserve, Kon Tum province (14°45' -15°15' N, 107°21' -108°20' E).

A montane area with the highest peak of 2,598m (Mount Ngoc Linh). According to the forest type classifi-

cation by THAI Van Trung (1978), the following types are found in the nature reserve: high montane broad-leaved evergreen forest ; medium to high montane broad-leaved evergreen forest ; low montane broad-leaved evergreen forest and secondary forest.

Kon Ka Kinh, Gia Lai provinces (14°09' -30'N, 108°16' -28'E).

Moderate to high montane broad-leaved evergreen forest ; high montane coniferous forest where *Fokienia hodginsii* is the dominant species ; riverine forest. The highest peak is about 1,742m (Mount Kon Ka Kinh).

Kon Cha Rang Nature Reserve, Gia Lai province (14°30'N ; 108°30'E).

Semi-mountainous flat primary semi-deciduous forests.

Bi Doup-Nui Ba Nature Reserve, Lam Dong province (12°00' -19'N ; 108°21' -44'E).

The topography is mountainous and whole site lies at 1,400m with highest peak Mount Bi Doup at 2,280m. There are two main forest types at the nature reserve : coniferous forest and evergreen forest. Coniferous forest is a serial vegetation type formed as a result of repeated burning. Evergreen forest covers 50% of the nature reserve. A large proportion of the evergreen forest belongs to the mixed broadleaf and coniferous forest.

Bao Lam Forest complex, Lam Dong province (11°36' -49'N ; 107°38' -49'E).

The topography is characterized by rolling hills at 600-1,200m. The vegetation is dominated by bamboo, a secondary vegetation type following logging. However, a significant area is covered by primary evergreen forest.

S. Vietnam (Cochinchina)

Cat Tien National Park, Dong Nai province (11°27'N ; 107°20'E).

Lowland evergreen and semi-deciduous forest with high diversity of plants and habitats. Wetland area.

Lo Go Sa Mat Nature Reserve, Tay Ninh province (11°19' -40'N ; 105°49' -59'E).

The topography is very flat with altitudes reaching only 20m. The sites supports a mosaic of lowland semi-deciduous forest, lowland deciduous forest and smaller patches of lowland evergreen forest. There are also some specific stands of tree species belonging to Dipterocarpaceae family.

Abbreviations

The following abbreviations have been used : UP = up-

perside, UpF = upperside of forewing, UpH = upperside of hindwing, UN = underside, UnF = underside of forewing, UnH = underside of hindwing, FL = length of forewing, wsf = wet season form, dsf = dry season form, wsf-dsf or dsf-wsf = intermediate form between wet season form and dry season form, colln = collection ;

ALM = Alexander L. Monastyrskii leg., BHM = Bui Huu Manh leg., BMNH = Natural History Museum, London (formerly British Museum (Natural History)), BXP = Bui Xuan Phuong leg., FFI = Fauna & Flora International leg., FR = Frontier leg., HVH = Ha Van Hoach leg., KUCGE = School of Social and Cultural Studies (Natural History, Biology), Kyushu University (formerly Biological Laboratory, College of General Education, Kyushu University), MN = collection of Mr Masatoshi Nishimura, MNHN = Muséum National d'Histoire Naturelle, Paris, MSU = Moscow State University, RIEB = Research Institute of Evolutionary Biology, Tokyo, RS = Robert Shore leg., TME = Toyosato Museum of Entomology, Tsukuba, VVL = Vu Van Lien leg., ZSM = Zoologische Sammlung des Bayerischen Staates, München ;

C. Vietnam (N, C, S) : N = northern, C = central, S = southern part of Central Vietnam.

Key to the species of Vietnamese *Ypthima*

- 1 UnH with two apical ocelli in spaces 5 and 6. 2
- UnH with one apical ocellus in space 6. 15
- 2 Moderate or large species. FL usually larger than 22.0mm. ♂ aedeagus in lateral view strongly curved dorsally. 3
- Moderate or small species. FL usually less than 21.5 mm. ♂ aedeagus ventral surface of suprazonal sheath entirely membranous. 11
- 3 UnH ocellus in space 5 fused with ocellus in space 6. *sakra*
- UnH ocellus in space 5 touching with ocellus in space 6, but never fused with it. 4
- 4 UnH with two straight discal fasciae. 5
- UnH discal fasciae, if present, never quite straight. 7
- 5 UP grayish-brown. *pseudosavara*
- UP ochreous brown or dark brown. 6
- 6 Large species. FL usually larger than 23.0mm. UpF brand more or less prominent. *savara*
- Moderate species. FL usually less than 23.0mm. UpF brand invisible to naked eye. *similis*
- 7 UN rich dark brown without an ochreous tinge. 8
- UN ochreous brown. 10
- 8 UnH with two distinct discal fasciae. Moderate species. FL usually less than 23.0mm. *affectata*
- UnH inner discal fascia indistinct. Large species. FL usually larger than 23.0mm. 9
- 9 UN striation fine and dense. *persimilis*

- UN striation comparatively coarse. *atra*
- 10 UN striation fine and dense. UpH usually without ocellus in space 5. FL usually less than 25.0mm. *evansi*
- UN striation comparatively coarse. UpH bears large ocellus in space 5. FL usually larger than 25.0mm. *dohertyi*
- 11 UpF with subapical ocellus faint. UnH tornal ocelli in straight line. *lisandra*
- UpF with a prominent subapical ocellus. UnH ocellus in space 2 shifted more or less inwards. 12
- 12 UnF with uniform brown striation. ♂ aedeagus nearly straight. *philomela*
- UnF with two distinct discal fasciae. ♂ aedeagus curved ventrally at middle. 13
- 13 UpF subapical ocellus with entirely rounded yellow ring ; brand ill defined. *nebulosa*
- UpF subapical ocellus with more or less oval yellow ring ; brand moderately to markedly prominent. 14
- 14 FL usually larger than 18.0mm. *balbus*
- FL usually less than 18.0mm. *singorensis*
- 15 UnH with three tornal ocelli in spaces 1b, 2 and 3. ... 16
- UnH with two tornal ocelli in spaces 1b and 2. 18
- 16 Small species. FL less than 18.0 mm. *huebneri*
- Moderate or large species. FL larger than 20.0 mm. 17
- 17 UnH ocellus in space 2 almost same size in that of space 3. *tappana*
- UnH ocellus in space 2 markedly larger than ocellus in space 3 that sometimes may be absent. Very large species. *praenubila*
- 18 Small species. FL less than 17.0mm. *norma*
- Moderate species. FL larger than 17.5mm. 19
- 19 UnH apical ocellus markedly larger than ocellus in space 2 except dsf of *frontierii*. 20
- UnH apical ocellus almost same size ocellus in space 2. 22
- 20 UN both wings with submarginal fascia obscure. *frontierii*
- UN both wings with distinct submarginal fascia. 21
- 21 UN dark brown without an ochreous tinge. Apex of ♂ valva with small serration. *sarcaposa*
- Both sexes smaller than *sarcaposa*. UN ochreous brown. Apex of ♂ valva without serration. *confusa*

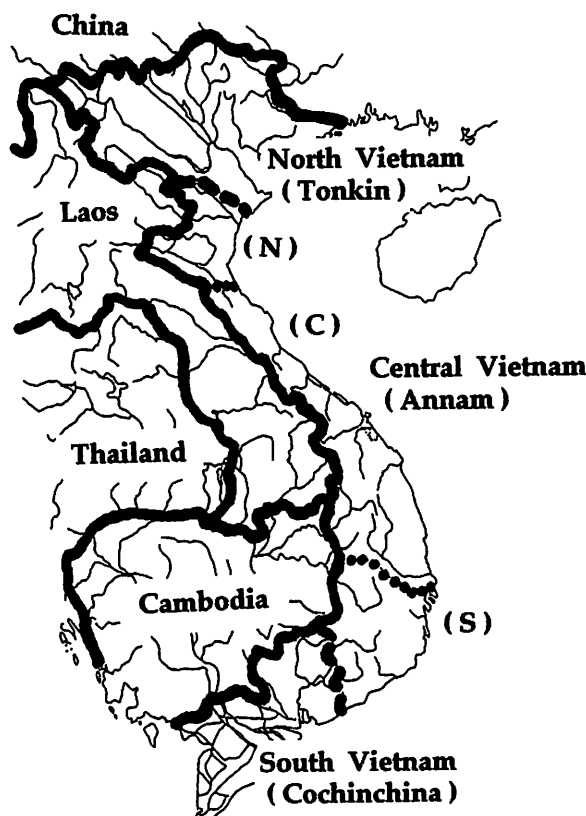


Fig. 1. Faunal region of Vietnam.

- 22 ♂ UpF brand always obscure..... *watsoni*
 - ♂ UpF with prominent brand.23
 23 ♂ UpF with subapical ocellus faint. *imitans*
 - ♂ UpF with a prominent subapical ocellus. *daclaca*

LIST OF SPECIES

Sakra-group

Ypthima sakra leechi FORSTER, 1948

(Figs. 2a, 4.1)

Ypthima sakra leechi FORSTER, 1948 : 483, pl. 30, fig. 16♂ (UP), pl. 31, fig. 16♂(UN). Holotype ♂, Kunkalashan, Szechwan, W. China (ZSM) [colour transparencies of upper and underside examined].

Ypthima sakra leechi : MONASTYRSKII & DEVIATKIN, 2003 : 19. N. (Lao Cai).

Specimens examined. **N. Vietnam.** Lao Cai province : Hoang Lien Nature Reserve, 2♂, 20. ii. 1998, 3♂, 10. iii. 1998, 2♂, 13. iv. 1998 (all FR), 7♂, 1-2. vii. 1998 (BXP), 3♂, 25. 27. viii. 1998 (VVL), 2♂, 17. vii. 1998 (FR, in colln of TME), 1♂, 19. vii. 1998 (FR, in colln of TME) ; Sa Pa, O Quy Ho (1,650-1,750m), 2♂, 4-6. viii. 2000 (M. FURUKAWA) (1♂, KMNH IR 200,190).

FL. ♂, 22.0-23.5mm.

Habitats. Hoang Lien : grassland near Sa Pa settlement at 1,250m ; forested area at 1,700m.

Bionomics. There are specimen records for February to April and July to August.

Distribution. Western China and upper North Vietnam.

Remarks. This species is recorded in Vietnam for the first time.

The subspecies of *Ypthima sakra* MOORE are listed below.

ssp. *sakra* MOORE, [1858]

North West India, Nepal, Sikkim and Bhutan

ssp. *austeni* (MOORE, [1892])

Assam, Northern Burma, Thailand

ssp. *nuijiangensis* HUANG, 2001

S. E. Tibet

ssp. *leechi* FORSTER, 1948

Western China, North Vietnam

Ypthima atra CANTLIE & NORMAN, 1959

(Figs. 2b, 4.5)

Ypthima atra CANTLIE & NORMAN, 1959 : 69-71. Lectotype ♂, Kangpokpi 4000', Manipur (BMNH, B.M. Type No. Rh. 18512) [lectotype designated by Eliot, 1967 : 55-56].

Ypthima conjuncta : MONASTYRSKII & DEVIATKIN, 2003 : 20. N. (Bac Can).

Specimens examined. **N. Vietnam.** Bac Can province : Xuan Lac Commune, 4♂, 24. v. 2001 (BXP, in colln of

TME) (1♂, KMNHIR 200,191). Tuyen Quang province : Sinh Long Commune, 1♂, 20. v. 2001 (BXP, in colln of TME).

FL. ♂, 25.0-27.0mm.

Bionomics. There are specimen records for May.

Distribution. Manipur, Northern Burma, North Vietnam, South China and Hainan.

Remarks. This species is recorded in Vietnam for the first time.

Ypthima persimilis ELWES & EDWARDS, 1893

(Figs. 2c-d, 4.2, 4.3, 4.4)

Ypthima persimilis ELWES & EDWARDS, 1893 : 39-40. Syntypes 1♂1♀, Mao, Manipur, 7000' (BMNH) [Syntypes 1♂1♀, B.M. Type No. Rh. 3407♂, 3408♀ examined].

Ypthima atra : MONASTYRSKII & DEVIATKIN, 2003 : 19. N. (Lao Cai).

Specimens examined. **N. Vietnam.** Lao Cai province : Hoang Lien Nature Reserve, 2♂, 16. iv. 1998, 2♂, 31. vii. 1998, 2♂, 14. viii. 1998 (all FR), 2♂ 27, 31. viii. 1998 (VVL), 2♂, 14. viii. 1998 (FR, in colln of TME), 1♀, 31. viii. 1998 (VVL, in colln of TME) ; Sa Pa, O Quy Ho (1650-1750m), 14♂3♀, 4-6. viii. 2000 (M. FURUKAWA) (2♂1♀, KMNHIR 200,192) ; Sa Pa, Bankhoang, 1♂, 16. iv. 2001 (M. WAKABAYASHI colln) ; Sa Pa, Taphin, 1♂, 2. v. 2001 (M. WAKABAYASHI colln) (KMNHIR 200,193) ; Sa Pa, Giang Tachai, 1♂1♀, 3-4. v. 2001 (M. WAKABAYASHI colln).

FL. ♂, 23.0-26.0mm ; ♀, 25.0-26.5mm.

Habitats. Hoang Lien : scrub near Sa Pa settlement at 1,500 m.

Bionomics. There are specimen records for April to May, and July to August.

Distribution. Sikkim, Bhutan, Assam and North Vietnam.

Remarks. This species is recorded in Vietnam for the first time.

Ypthima evansi evansi ELIOT, 1967

(Figs. 2e, 4.6)

Ypthima evansi evansi ELIOT, 1967 : 56-58, text-fig. m (androconia), figs. 7 (♂ genitalia, Dawnas), 15 (♂ genitalia, N. Shan States). Holotype ♂, N.E. Burma, North Shan States (BMNH).

Ypthima evansi : MONASTYRSKII & DEVIATKIN, 2003 : 20. C. (Lam Dong).

Specimens examined. **C. Vietnam (S).** Lam Dong province : Bi Doup montane area (1300m), 2♂, 19. iv. 2002 (ALM, in colln of TME) (1♂, KMNHIR 200,194), 3♂1♀, 5-24. iv. 2002 (BXP, ALM, in ALM colln).

FL. ♂, 23.5-25.0mm ; ♀, 26.0mm.

Habitats. Lam Dong (Bi Doup) : evergreen forest at 1,300-

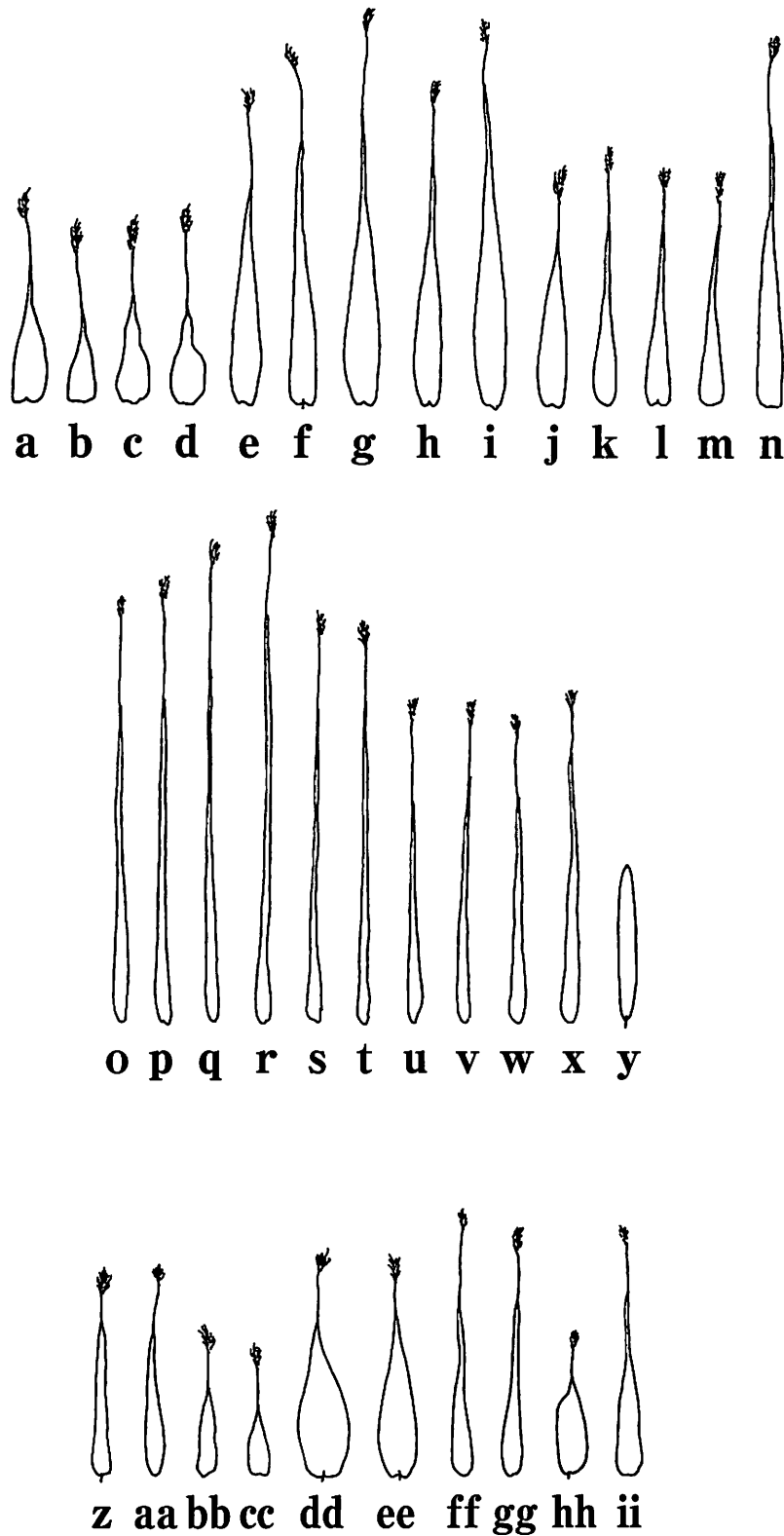


Fig. 2. Androconia of *Ypthima* species : a, *sakra leechi* (Hoang Lien) ; b, *atra* (Bac Can) ; c-d, *persimilis* (Hoang Lien) ; e, *evansi evansi* (Bi Doup) ; f, *dohertyi mossmani* (Ngoc Linh) ; g, *savara tonkiniana* (Ba Be) ; h, ditto (Ben En) ; i, *savara savara* (Ban Don) ; j, *pseudosavara* (Ben En) ; k, *similis* (Kon Cha Rang) ; l, ditto (Lam Dong) ; m, *affectata* (Ba Be) ; n, *tappana selinuntoides* (Huong Son forest) ; o, *baldus baldus* (Ba Be) ; p, ditto (Cuc Phuong) ; q, ditto (Ban Me Thuot) ; r, ditto (Da Lat) ; s, *singorensis indosinica* nom. nov. (Ngoc Linh) ; t, ditto (Play Ku) ; u, *nebulosa* (Ba Be) ; v, ditto (Pu Mat) ; w, *philomela peguana* (Da Lat) ; x, *lisandra lisandra* (Play Ku) ; y, *norma annamitica* (Da Lat) ; z, *praenubila praenubila* (Tam Dao) ; aa, *huebneri* (Da Lat) ; bb, *frontierii* (Hoang Lien) ; cc, ditto (Sapa) ; dd, *sarcaposa* (Ba Vi) ; ee, *confusa* (Ngoc Linh) ; ff, *imitans* (Tam Dao) ; gg, ditto (Vu Quang) ; hh, *watsoni inouei* (Tay Ninh) ; ii, *daclaca* sp. nov. (Dac Lac).

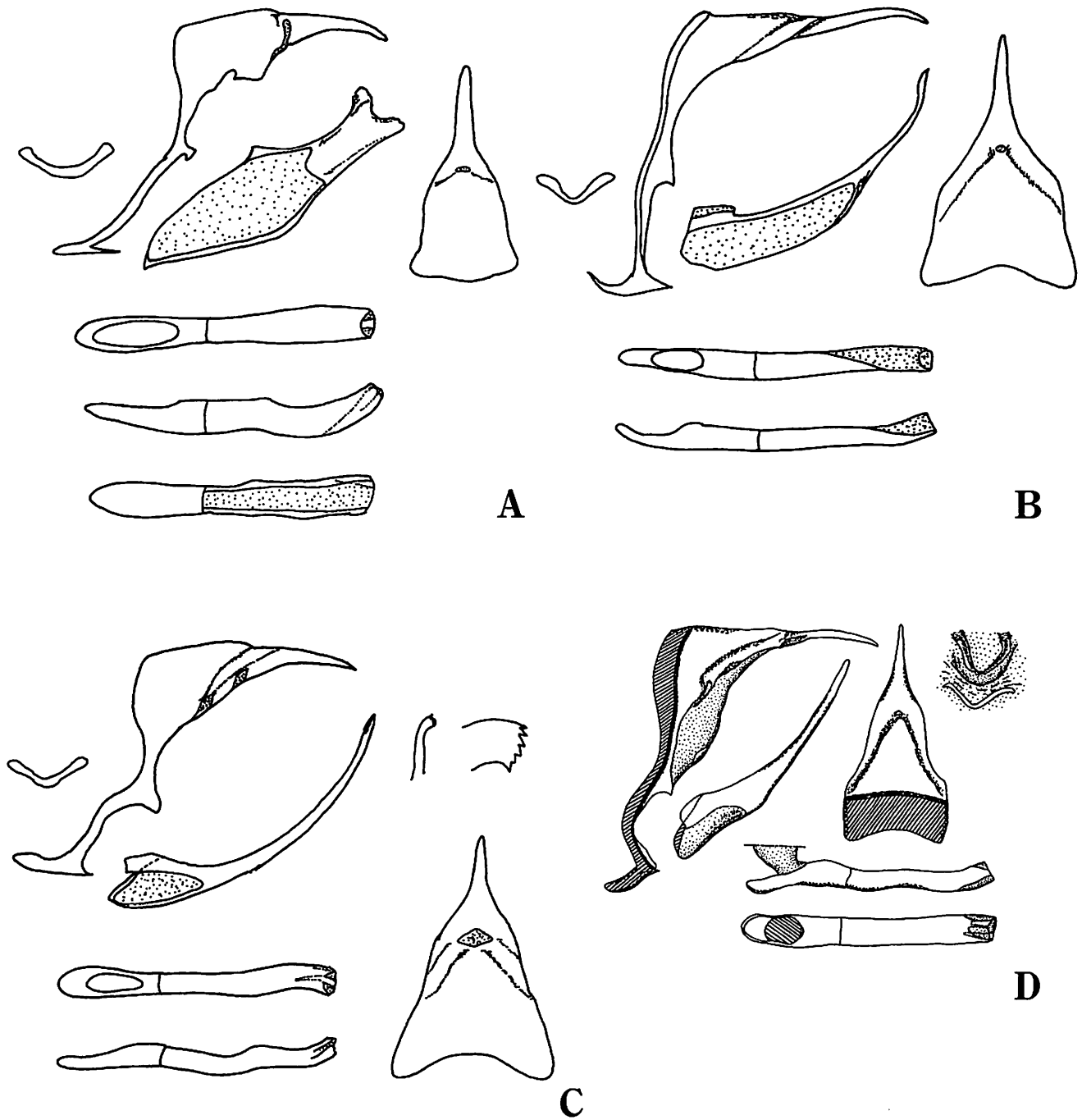


Fig. 3. Male genitalia of *Ypthima* species : A, *philomela peguana* (Da Lat) ; B, *daclaca* sp. nov. (paratype specimen, Dac Lac) ; C, *sarcaposa* (Ba Vi) ; D, *newara* (after SHIRÔZU & SHIMA, 1979).

1,400m.

Bionomics. There are specimen records for April.

Distribution. N. E. Burma, N. Thailand and Central Vietnam (S).

Remarks. This species is recorded in Vietnam for the first time.

The subspecies of *Ypthima evansi* ELIOT are listed below.

ssp. *evansi* ELIOT, 1967

N. E. Burma, N. Thailand and Central Vietnam

ssp. *haka* ELIOT, 1967

N. W. Burma

***Ypthima dohertyi mossmani* ELIOT, 1967**

(Figs. 2f, 4.7)

Ypthima dohertyi mossmani ELIOT, 1967 : 59, pl. 2, figs. a♂ (UP), b♂(UN). Holotype ♀, Cameron Highlands 5000', Pahang, Malaya (BMNH, B.M. Type No. Rh. 17097♀).

Ypthima dohertyi mossmani : MONASTYRSKII & DEVYATKIN, 2003 : 19. C. (Kon Tum, Gia Lai)

Specimens examined. **C. Vietnam (C).** Kon Tum province : Ngoc Linh Nature Reserve (1700m), 1♂, 21. iii. 1998 (ALM, in colln of TME), 1♂, 22. iii. 1998 (ALM) (KMNH IR 200,195), 10♂1♀, 20. iii-6. iv. 1998, 2♂1♀, 24. iv. 1998 (HVH, ALM). Gia Lai province : Kon Ka Kinh Nature Reserve, 10♂, 19-26. iv. 1999 (ALM).

FL. ♂, 25.5-27.0mm ; ♀, 26.0-28.0mm.

Habitats. Ngoc Linh : grassland in the forest at 1,600-1,700 m ; Kon Ka Kinh : ridge forest at 1,600m.

Bionomics. There are specimen records for March to April.

Distribution. Malaya and Central Vietnam.

Remarks. Examples from Central Vietnam agree generally with the Malayan subspecies *mossmani*. This is the first record from Vietnam.

The subspecies of *Ypthima dohertyi* (MOORE) are listed below.

ssp. *hasia* ELIOT, 1967

Assam (Khasia)

ssp. *dohertyi* (MOORE, [1892])

Burma (Shan States to Dawns), N. Thailand, Laos

ssp. *mossmani* ELIOT, 1967

Malaya, Central Vietnam (Annam)

***Ypthima savara tonkiniana* FRUHSTORFER, 1911**

(Figs. 2g-h, 5.2)

Ypthima savara tonkiniana FRUHSTORFER, 1911 : 292, pl. 99, fig. #2♂(UN). Syntypes, Chiem-Hoa, Tonkin(BMNH) ; Metaye, 1957 : 104. North Vietnam ; ELIOT, 1967 : 55, fig. 5 (♂ genitalia). Tonkin.

Ypthima savara f. tonkiniana : DUBOIS & VITALIS DE SALVAZA, 1924 : 27. Chiem-Hoa, Tonkin.

Ypthima savara tonkiniana : MONASTYRSKII & DEVYATKIN, 2003 : 19. N. , C. (to Quang Tri).

Specimens examined. **N. Vietnam.** Bac Can province : Ba Be National Park, 2♂, 27. iii. 4. iv. 1997 (ALM), 1♂(wsf), 28. iii. 1997 (ALM) (KMNHIR 200,196), 1♂(wsf), 2. iv. 1997 (ALM, in colln of TME). **C. Vietnam (N).** Thanh Hoa province : Ben En National Park, 3♂1♀, 22, 31. vii. 1997 (FR), 2♂(wsf), 30, 31. vii. 1997 (FR, in colln of TME), 2♂(wsf), 1. viii. 1997 (FR, in colln of TME), 1♂(wsf), 2. viii. 1997 (FR, in colln of TME). Nghe An province : Pu Mat Nature Reserve, 10♂3♀, 25. vi-10. ix. 1998 (FFI), 1♂(wsf), 25. v. 1998 (TME colln).

Distribution record taken from the literature. N. Vietnam, Tuyen Quang province, Chiem Hoa (FRUHSTORFER, 1911).

FL. ♂, 22.0-27.0mm ; ♀, 25.0mm.

Habitats. Ba Be : grassy clearing ; Ben En : secondary low-land forest edge ; Pu Mat : forest at 200 to 1,500m.

Bionomics. There are specimen records for March to April from N. Vietnam, for May to September from C. Vietnam (N).

Distribution. North and Central Vietnam.

Remarks. ELIOT (1967) associated the populations from Lower Tenasserim and Malaya with subspecies *tonkiniana* by the characteristic of darker ground colour, much reduced brand, and shorter androconia. We restricted subspecies *tonkiniana* to the populations from North and Central Vietnam (N) by the following differences : UN with two straight discal fasciae more prominent ; there is small ocelli on UnH in dsf, while subspecies *savara* these ocelli strongly reduced to dots.

***Ypthima savara savara* GROSE SMITH, 1887**

(Figs. 2i, 5.1)

Ypthima(sic) savara GROSE SMITH, 1887 : 267. Syntypes, Burmah, Siamese frontier (BMNH, B.M. Type No. Rh. 3410♂, 3411♂).

Ypthima savara savara : MONASTYRSKII & DEVYATKIN, 2003 : 19. C. (to Lam Dong).

Specimens examined. **C. Vietnam (C).** Thua Thien Hue province : Phong Dien Nature Reserve, 1♂, 19. vi. 1998 (ALM). ; Bach Ma National Park, 1♂, vii. 1996 (ALM). Quang Nam province : Ba Na, 1♂(wsf), 23. viii. 1995 (FR, in colln of TME). Gia Lai province : Kon Ka Kinh Nature Reserve, 1♂, iii-iv. 1999 (ALM). **C. Vietnam (S).** Dac Lac province : Ban Don (400m), 1♂1♀(dsf), 10. iii. 1997 (MN). Lam Dong province : Bao Loc, 1♂, 2-8. viii. 2001 (Y. KISHIDA) (KMNHIR 200,197). **S. Vietnam.** Binh Phuoc province : Nghia Trung Forest complex, 5♂, 20-30. xi. 2003 (ALM). Dong Nai province : Cat Tien National Park (Cat Loc), 11♂, 15. ii. 2000, 9-18. v. 2000 (BHM, ALM). FL. ♂, 24.0-24.5mm ; ♀, 23.5-24.0mm.

Habitats. Phong Dien : forest at 200-300m ; Bach Ma : at 1,200-1,400m ; Nghia Trung : evergreen forest with bamboo at 250m ; Cat Loc : forest path at 500-600m.

Bionomics. There are specimen records for February to August and November.

Distribution. Burma to Thailand, Laos, Malaya, Central Vietnam (C, S) and South Vietnam.

Remarks. In genitalia of specimens from Kon Ka Kinh and Cat Loc the saccus is approximately half the length found in specimens from Ben En and Pu Mat.

The subspecies of *Ypthima savara* GROSE SMITH are listed below.

ssp. *savara* GROSE SMITH, 1887

Burma, Thailand, S. Laos, Malaya, C. Vietnam (C, S) and S. Vietnam

ssp. *tonkiniana* FRUHSTORFER, 1911

N. & C. Vietnam (N), N. & C. Laos

***Ypthima pseudosavara* UÉMURA & MONASTYRSKII, 2000**
(Figs. 2j, 4.8)

Ypthima pseudosavara UÉMURA & MONASTYRSKII, 2000 : 153-154, figs. 1d-e (androconia), 3 (♂ genitalia), 10 (Holotype ♂, UP), 11 (Holotype ♂, UN), 12 (Paratype ♂, UP & UN), 13 (Paratype ♂, UP & UN). Holotype ♂, Ben En National Park, C. Vietnam (TME) [examined].

Ypthima pseudosavara : MONASTYRSKII & DEVYATKIN, 2003 : 19, pl. 2, fig. 5♂(UP). N., C.

Specimens examined. **N. Vietnam.** Bac Can province : Ba Be National Park, Xuan Lac Commune, 1♂, 6. v. 2001 (BXP). **C. Vietnam (N).** Thanh Hoa province : Xuan Lien Nature Reserve (450 m), 1♂, 29. x. 1998 (ALM) ; Ben En National Park, 2♂, 24, 31. vii.1997 (FR), 1♂, 1. viii. 1997 (FR) (KMNHIR 200,198). Nghe An province : Pu Hoat Nature Reserve, 1♂1♀, 16-18. iv. 1999 (FR) ; Pu Mat Nature Reserve, 2♂, 4-8. vii. 1998 (FFI).

FL. ♂, 22.0-25.5mm ; ♀, 29.0mm.

Habitats. Xuan Lien : bamboo at 450m ; Ben En : lowland forest ; Pu Mat : secondary forest at 400m.

Bionomics. There are specimen records for April, July to August and October.

Distribution. Lowland areas in northern sites of Central Vietnam and in northern Vietnam.

Type material is deposited in TME, BMNH, and MSU.

***Ypthima similis* ELWES & EDWARDS, 1893**
(Figs. 2k-l, 5.3, 5.4)

Ypthima similis ELWES & EDWARDS, 1893 : 30, pl. 1, fig. 19 (♂ genitalia). Syntypes 6♂, Karen Hills, Burma (BMNH) [Syntypes 2♂, B.M. Type No. Rh. 3226♂, 3227♂ examined].

Ypthima similis : MONASTYRSKII & DEVYATKIN, 2003 : 20. C. (Gia Lai to Lam Dong).

Specimens examined. **C. Vietnam (C).** Gia Lai province : Kon Cha Rang Nature Reserve, 10♂ (dsf), 28. ii-17. iii. 1999 (ALM) ; Kon Ka Kinh Nature Reserve, 4♂ (dsf), 30. iii-1. iv. 1999 (ALM). **C. Vietnam (S).** Lam Dong province : Bao Loc, 1♂(wsf), 2-8. viii. 2001 (Y. KISHIDA) ; Bao Lam, 4♂, 28. iv. - 5. v. 2003 (BHM, in colln of TME) (1♂, KMNHIR 200,199).

FL. ♂, 20.0-23.5mm.

Habitats. Kon Cha Rang : primary forest at 900-1,000m ; Kon Ka Kinh : forest at 1,200-1,300m ; Bao Lam : ever-

green forest at 1,000-1,100m.

Bionomics. There are specimen records for end February to the beginning May and July to August.

Distribution. Burma (Shan States to Dawna Range), N. & E. Thailand, Laos, C. Vietnam.

Remarks. A new record from Vietnam. All male specimens from Gia Lai (Kon Ka Kinh and Kon Cha Rang) and Lam Dong (Bao Loc and Bao Lam) provinces lack the paler and freckled space between the outer discal and submarginal fasciae on the UpF. At the same time their Un reveal similarity to the Un of *similis* from Laos and Thailand.

***Ypthima affectata* ELWES & EDWARDS, 1893 stat. rev.**
(Figs. 2m, 5.5, 5.6)

Ypthima affectata ELWES & EDWARDS, 1893 : 30-31, pl. 1, fig. 20 (♂ genitalia). Syntypes 1♂2♀, Terria Ghat and Mamloo, in the Khasias, 1500' -3000' (BMNH) [Syntype ♂, B. M. Type No. Rh. 3228♂ examined].

Ypthima affectata : MONASTYRSKII & DEVYATKIN, 2003 : 20. N. (Tuyen Quang), C. (Nghe An).

Specimens examined. **N. Vietnam.** Bac Can province : Ba Be National Park, 1♂, 5. iv. 1997 (ALM, in colln of TME) ; Dong Phuc district, 3♂2♀, 16-19. iv. 2001 ; Lung Li district, 1♀, 29. iv. 2001. Tuyen Quang province : Na Hang Nature Reserve, 1♂ (wsf), 12. viii. 1996 (ALM), 1♂(wsf), 7. vi. 2003 (BXP) (KMNHIR 200,200), 2♂1♀(wsf), 9. vi. 2003 (BXP, in colln of TME). **C. Vietnam (N).** Nghe An province : Pu Mat Nature Reserve, 2♂, 2-4. vii. 1998 (FFI). FL. ♂, 21.0-22.5mm ; ♀, 22.0mm.

Bionomics. There are specimen records for April and July to August.

Distribution. Assam and N. & C. Vietnam.

Remarks. This species, once treated as a subspecies of *similis*, is sympatric with *similis* in Northern Burma. It is possibly that both species *affectata* and *similis* fly together in northern Annamites area (Nghe An and Ha Tinh Provinces). *Y. affectata* from Pu Mat and *Y. similis* from Laos are very close to each other and probably fly together in some sites.

***Tappana*-group**

***Ypthima tappana selinuntoides* MELL, 1942 stat. nov.**
(Figs. 2n, 5.7, 5.8)

Ypthima selinuntoides MELL, 1942 : 261. Syntypes 7♂2♀, Tsha yün shan & Linping, Kwangtung, S. China [untraced].

Ypthima tappana selinuntoides : MONASTYRSKII & DEVYATKIN, 2003 : 20. N., C. (to Gia Lai).

Specimens examined. **N. Vietnam.** Bac Can province : Ba Be National Park, 1♀, 13. vi. 1997 (ALM). Vinh Phu province : Tam Dao (1,300m), 1♀, 9. x. 1994 (ALM), 1♀, 10.

vii-2. viii. 1990 (S. NAGAI). **C. Vietnam (N).** Nghe An province : Bu Huong, 1 ♂, 27. iv. 1995 (FR). Pu Mat Nature Reserve, 4 ♂, 25. vi-8. vii. 1998 (FFI). **C. Vietnam (C).**

Ha Tinh province : Vu Quang Nature Reserve (700m), 2 ♂1 ♀, 28-30. viii. 1997 (ALM), 1 ♀, 30. viii. 1997 (TME colln) ; Huong Son forest, 1 ♂, 23. iv. 2001 (ALM, in colln of TME), 1 ♂, 30. iv. 2001 (ALM) (KMNHIR 200,201), 3 ♂1 ♀, 22. iv-3. vi. 2001 (ALM, FR). Thua Thien Hue province : Bach Ma National Park, 1 ♀, 15. vii. 1996 (ALM). Quang Nam province : Song Thanh Nature Reserve, 1 ♂, 15. ix. 2002 (RS). Gia Lai Province : Kon Cha Rang Nature Reserve, 9 ♂2 ♀, 3-17. iii. 1999 (ALM) ; Kon Ka Kinh Nature Reserve, 2 ♂, 24. iii. 1999 (ALM).

FL. ♂, 20.0-21.0mm ; ♀, 21.0-22.5mm.

Habitats. Pu Mat : secondary forest at 400m ; Vu Quang : primary forest at 300-700m ; Huong Son : secondary vegetation at 200-400m ; Kon Cha Rang : primary forest at 1,000m ; Kon Ka Kinh : forest at 1,300m.

Bionomics. There are specimen records for March to April, June to August and October to November.

Distribution. Southern China, and North and Central Vietnam.

Taxonomy. MELL (1942) described a new taxon *selinuntioides* from Kwangtung, Southern China as a species of the genus *Ypthima*. The syntypic specimens remain untraced ; however, judging from the original description we consider this taxon is conspecific with *Y. tappana*. We treat *selinuntioides* as a subspecies to include the Southern China and Vietnam population of *Y. tappana*.

Remarks. This species is recorded in North and Central Vietnam for the first time.

The subspecies of *Ypthima tappana* MATSUMURA are listed below.

ssp. *tappana* MATSUMURA, 1909

Taiwan

ssp. *selinuntioides* MELL, 1942

Southern China, N. & C. Vietnam

ssp. *continentalis* MURAYAMA, 1981

Central & Western China

Philomela-group

Ypthima baldus baldus (FABRICIUS, 1775)

(Figs. 20-r, 6.4, 6.5)

Papilio baldus FABRICIUS, 1775 : 829. India.

Ypthima selinuntioides GODFREY, 1919 : 466. Daban, S. An-nam.

Ypthima baldus f. aest. *baldus* : METAYE, 1957 : 102. North Vietnam.

Ypthima baldus f. hib. *marshalli* : METAYE, 1957 : 102. Central Vietnam.

Ypthima baldus : IKEDA *et al.*, 1999 : 57, figs. 6-14 ♂(UP), 6-15 ♂(UN), 6-16 ♀(UP), 9-32 (♂ genitalia). Cuc Phuong.

Ypthima baldus : MONASTYRSKII & DEVYATKIN, 2003 : 20. N., C., S.

Specimens examined. **N. Vietnam.** Bac Can province : Ba Be National Park, 40 ♂12 ♀(dsf), 21. iii - 6. iv. 1997 (ALM, in colln of TME) (2 ♂1 ♀, KMNHIR 200,202), 19 ♂5 ♀(wsf), 31. v - 13. vi. 1997 (ALM, in colln of TME), 1 ♂2 ♀(wsf), 17-18. ix. 1996 (TME colln), 5 ♂2 ♀(dsf), 4-7. xi. 1996 (TME colln). Tuyen Quang province : Na Hang, 4 ♂2 ♀(wsf), 9, 13, 28. viii. 1996 (TME colln). Lao Cai province : Sa Pa, 1 ♂(dsf), iii. 1995 (TME colln) ; Hoang Lien Nature Reserve, 7 ♂2 ♀, 22. vii - 2. ix. 1998 (VVL), 1 ♂(wsf), 3. vi. 1998 (ALM, in colln of TME), 1 ♂1 ♀, 3, 4. vii. 1998 (FR, BXP, in colln of TME), 2 ♂1 ♀(wsf), 30. viii - 2. ix. 1998 (VVL, in colln of TME). Lai Chau province : Muong Nhe Nature Reserve, 2 ♂3 ♀, 6. ii - 3. iii. 1997 (FR), 3 ♂1 ♀(dsf), 18, 27. ii. 1997 (FR, in colln of TME). Vinh Phu province : Tam Dao National Park, 25 exs., iii-xii. 1995 (ALM). Ninh Binh province : Cuc Phuong National Park, 3 ♂5 ♀ (dsf), i, ii, 5 ♂2 ♀(wsf), iv, viii, ix, x. 1997-98 (ALM, FFI), 2 ♂(wsf), 14. vi. 1997 (ALM, in colln of TME). Ha Tay province : Ba Vi National Park, 1 ♂2 ♀(dsf), 2, 9. iii. 1996, 3 ♂1 ♀(wsf), 25. v. 1996, 1 ♂(wsf), 26. vi. 1996, 1 ♂1 ♀(wsf), 7. vii. 1996, 1 ♀(wsf), 20. x. 1996 (all TME colln). Hai Phong province : Cat Ba (Is.) National Park, 1 ♂1 ♀(wsf), 15. iii, 20. vii. 1999 (FR). **C. Vietnam (N).** Thanh Hoa province : Ben En National Park, 2 ♂(wsf), 15, 17. vii. 1997 (FR, in colln of TME). Nghe An province : Pu Hoat Nature Reserve, 4 ♂5 ♀, 22. x - 1. xii. 1999 (FR) ; Pu Mat Nature Reserve, 12 exs., 2. v - 23. ix. 1998 (FFI). **C. Vietnam (C).** Ha Tinh province : Vu Quang Nature Reserve, a number of specimens, vii-ix. 1997 (ALM), 1 ♂(wsf), 29. vii. 1997 (KMNHIR 200,203), 9 ♂3 ♀(wsf), 23. viii - 9. ix. 1997 (TME colln) (1 ♂1 ♀, KMNHIR 200,204). Quang Tri province : Phong Dien Nature Reserve, 2 ♂(wsf), 30. vi. 1998 (ALM, in colln of TME). Thua Thien Hue province : Bach Ma National Park, 15 ♂, 14-23. vii. 1996 (ALM, BXP), 7 ♂1 ♀(wsf), 15-21. vii. 1996 (TME colln), 2 ♂1 ♀, 24-28. vii. 2001 (Y. KISHIDA). Quang Nam province : Ba Na Nature Reserve, 1 ♂, 26. viii. 1995 (FR), 3 ♂(wsf), 20, 25, 26. viii. 1995 (TME colln). Kon Tum province : Ngoc Linh Nature Reserve, 7 ♂3 ♀, 20. iii-14. iv. 1998 (ALM, HVH), 1 ♀(dsf), 20. iii. 1998 (ALM, in colln of TME), 1 ♂(dsf-wsf), 9. iv. 1998 (ALM, in colln of TME), 1 ♂(wsf), 9. iv. 1998 (ALM, in colln of TME). Gia Lai province : Kon Cha Rang Nature Reserve, 15 ♂5 ♀ (dsf), 28. ii-17. iii. 1999 (ALM) ; Kon Ka Kinh Nature Reserve, 12 ♂3 ♀, 23. iii-8. iv. 1999 (ALM). **C. Vietnam (S).** Dac Lac province : Ban Me Thuot, Daray Sap Waterfall (500m), 1 ♂(dsf-wsf), 9. iii. 1997 (MN). Lam Dong province : Da Lat (1,500m), 3 ♂2 ♀(dsf), 19. iii. 1991 (S. OSADA) (2 ♂1 ♀, KMNHIR 200,205) ; Da Lat (1,200m), 1 ♂1 ♀(wsf), 29-31. vii. 2001 (Y. KISHIDA) ; Bao Loc, 1 ♀(wsf-

dsf), 26. xi. 1996 (MN), 1 ♂(wsf), 2-8. viii. 2001 (Y. KISHIDA). **S. Vietnam.** Dong Nai province : Cat Tien National Park, 67 ♂21 ♀, i-v. 2000 (ALM, BHM).

FL. Hoang Lien : ♂, 16.0-19.0mm ; ♀, 17.5-18.5mm. Ba Be and Na Hang : ♂, 18.0-21.5mm ; ♀, 19.5-22.0mm. Ba Vi : ♂, 19.5-22.5mm ; ♀, 22.0-23.0mm. Bach Ma : ♂, 19.5-20.0mm ; ♀, 19.5-20.5mm.

Habitats. Muong Nhe : secondary vegetation at 300 to 500 m ; Pu Hoat : secondary vegetation, scrub ; Pu Mat : secondary vegetation up to 800m ; Ngoc Linh : grassland forest paths at 1,000 to 1,600m ; Kon Ka Kinh : grassland at 800-1,200m ; Cat Tien : forest trail at 100-200m.

Bionomics. Material has been seen from almost all months.

Distribution. From N.W. Himalayas to Assam, W. & S. China and Indo-China.

Remarks. Highly variable in size and shape of wings, wing pattern. It has rather variable seasonal forms. It is possibly that the Hainan population (ssp. *gallienus*) belongs to the nominate subspecies.

The subspecies of *Ypthima baldus* (FABRICIUS) are listed below.

ssp. *madrasa* EVANS, 1923

South India

ssp. *satpura* EVANS, 1923

Central Provinces of India

ssp. *baldus* (FABRICIUS, 1775)

North West Himalayas to Assam, Western China,
Southern China and Indo-China

ssp. *luoi* HUANG, 1999

Tibet

ssp. *gallienus* FRUHSTORFER, 1911

Hainan

ssp. *zodina* FRUHSTORFER, 1911

Taiwan

ssp. *newboldi* DISTANT, 1882

Tenasserim, Peninsular Thailand, Malaya

ssp. *moerus* FRUHSTORFER, 1911

Sumatra, Siberut

ssp. *selinuntius* FRUHSTORFER, 1911

Borneo, Palawan, Natuna, Riau, Lingga, Billiton

***Ypthima singorensis indosinica* UÉMURA & MONASTYRSKII, nom. nov.**

(Figs. 2s-t, 6.7, 6.8)

Ypthima cerealis cerealis : UÉMURA, 1986 : 29-30. Bao Loc, S. Vietnam.

Ypthima singorensis : IKEDA *et al.*, 1999 : 57, figs. 7-4 ♂ (UP), 7-5 ♂ (UN), 9-34 (♂ genitalia). Cuc Phuong.

Ypthima singorensis indosinica : MONASTYRSKII & DEVIATKIN, 2003 : 20. N., C., S. (UÉMURA & MONASTYRSKII, in prep.)

Specimens examined. **N. Vietnam.** Ninh Binh province :

Cuc Phuong National Park, 1 ♀, 14. vi. 1997 (ALM, in colln of TME), 1 ♂, 3. viii. (S. OSADA). **C. Vietnam (N).** Thanh Hoa province : Ben En National Park, 1 ♂, 17. vii. 1997 (FR, in colln of TME). **C. Vietnam (C).** Ha Tinh province : Vu Quang Nature Reserve, 3 ♂2 ♀, viii-ix. 1997 (ALM). Quang Tri province : Phong Dien Nature Reserve, 2 ♂2 ♀, 27, 29, 30. vi. 1998 (ALM, in colln of TME). Kon Tum province : Ngoc Linh Nature Reserve, 7 ♂4 ♀, 9. iv-22. iv. 1998 (ALM, HVH), 2 ♂1 ♀, 9, 14, 22. iv. 1998 (ALM, in colln of TME). Gia Lai province : Kon Cha Rang Nature Reserve, 9 ♂2 ♀ (dsf), 28. ii-17. iii. 1999 (ALM) ; Kon Ka Kinh Nature Reserve, 3 ♂2 ♀, 23. iii-8. iv. 1999 (ALM) ; Play Ku (500m), 4 ♂2 ♀ (dsf), 6. iii. 1997 (MN) (1 ♂, KMNH IR 200,206). **C. Vietnam (S).** Dac Lac province : Ban Don (400m), 1 ♂5 ♀ (dsf), 10. iii. 1997 (MN). Lam Dong province : Da Lat (950m), 2 ♂1 ♀ (dsf), 14. iii. 1997 (MN) ; Bao Loc, 1 ♂3 ♀ (wsf-dsf), 26. xi. 1996 (MN). **S. Vietnam.** Dong Nai province : Cat Tien National Park, 2 ♂ (wsf), 17-18. xi. 1999 (ALM), 1 ♂, 22. i. 2000 (BHM), 1 ♂, 13. ii. 2000 (BHM). Tay Ninh province : Lo Go Sa Mat Nature Reserve, 2 ♂, 18, 19. x. 2001 (ALM).

FL. ♂, 17.0-19.0mm ; ♀, 16.0-18.0mm.

Habitats. Vu Quang : secondary vegetation at 100-200m ; Ngoc Linh : grassland, scrub at 1,000 to 1,300m ; Kon Cha Rang : primary forest at 900-1,000m ; Kon Ka Kinh : secondary vegetation at 800-1,200m.

Distribution. Thailand, Laos, Vietnam.

Taxonomy. Synonymic list of *Ypthima cerealis* and *Y. singorensis* are as follows.

Ypthima singala cerealis WATSON, 1897

Ypthima cerealis WATSON, 1897 : 646-647, pl. A, figs. 3 ♂ (dsf), 4 ♂ (wsf).

Ypthima singala cerealis : ELIOT, 1988 : 31.

Ypthima singorensis AOKI & UÉMURA, 1984

Ypthima cerealis singorensis AOKI & UÉMURA, 1984 : 77-79, figs. 2j (androconia), 6 (distribution map), 8B (♂ genitalia), 26 ♂ (UP & UN), pl. 5, figs. 3 ♂ (UP), 7 ♂ (UN).

Ypthima singorensis indosinica UÉMURA & MONASTYRSKII, nom. nov.

Ypthima cerealis cerealis : AOKI & UÉMURA, 1984 : 77-79, figs. 2g-i (androconia), 5 (♂ genitalia), 6 (distribution map), 8A (♂ genitalia), 24 ♂ (UP & UN, wsf), 25 ♂ (UP & UN, dsf), 27 ♀ (UP & UN, dsf) ; UÉMURA, 1986 : 29-30. Nec Watson, 1897.

Ypthima singorensis : IKEDA *et al.*, 1999 : 57, figs. 7-4 ♂ (UP), 7-5 ♂ (UN), 9-34 (♂ genitalia).

Ypthima singorensis indosinica : MONASTYRSKII & DEVIATKIN, 2003 : 20. Unavailable.

AOKI & UÉMURA (1984) misidentified this species as *Ypthima cerealis* WATSON, 1897, and at the same time, they described a new subspecies *Y. cerealis singorensis* from peninsular Thailand. According to ELIOT (1988 and personal communication), *Y. cerealis* WATSON should be treated as a subspecies of *Ypthima singala* R. FELDER, 1868. Subsequently, *singorensis* AOKI & UÉMURA, 1984 was upgraded to the spe-

cific name of this species (IKEDA *et al.*, 1999 ; MONASTYRSKII & DEVYATKIN, 2003). The Indo-Chinese population of this species is different from that of peninsular Thailand (ssp. *singorensis*) and here we describe a new subspecies, *indosinica*, for the Indo-Chinese population. Holotype ♂ labeled Chiang Mai, N. Thailand, 13. viii. 1970 (H. Yui) preserved in TME. MONASTYRSKII & DEVYATKIN's (2003) *indosinica* is unavailable under the Code (4th Edn.).

The subspecies of *Ypthima singorensis* AOKI & UÉMURA are listed below.

ssp. *singorensis* AOKI & UÉMURA, 1984 **stat. nov.**

Peninsular Thailand

ssp. *indosinica* UÉMURA & MONASTYRSKII, **nom. nov.**

Thailand, Indo-China.

***Ypthima nebulosa* AOKI & UÉMURA, 1982**

(Figs. 2u-v, 6.10, 6.11)

Ypthima nebulosa AOKI & UÉMURA, 1982 : 13-14, pl. 5, figs. 22♂(UP), 23♀(UP), pl. 6, figs. 22♂(UN), 23♀(UN), text-fig. 3 (♂genitalia). Holotype ♂, Sibolangit, Sumatra (RIEB) [examined].

Ypthima nebulosa : MONASTYRSKII & DEVYATKIN, 2003 : 20. N., C.

Specimens examined. **N. Vietnam.** Bac Can province : Ba Be National Park, 1♂, 11. i. 1998 (ALM, in colln of TME), 1♂, 3. xi. 1996 (TME colln), 1♂, 3. xi. 1996 (ALM). Vinh Phu province : Tam Dao, 1♂, vii. 1992 (S. NAGAI) (KMNH IR 200,207). **C. Vietnam (N).** Nghe An province : Pu Mat Nature Reserve, 1♂, 1. v. 1998 (FFI, in colln of TME). **C. Vietnam (C).** Gia Lai province : Kon Ka Kinh Nature Reserve, 1♀, 25. iii. 1999 (ALM).

FL. ♂, 18.0-22.0mm ; ♀, 20.0mm.

Habitats. Ba Be : grassland at the river valley ; Kon Ka Kinh : forest edge at 1,300-1,500m.

Bionomics. There are specimen records for January, May, July, November.

Distribution. Burma, Thailand, Laos, Vietnam and Sumatra. Taxonomy. ELIOT (1988) has synonymized the name *nebulosa* with *humei* ELWES & EDWARDS, 1893 described from Malewoon, Tenasserim. UÉMURA reexamined the male holotype of *humei* preserved in BMNH. As a result, the name *humei* synonymized with *Ypthima newboldi* DISTANT, 1882, which is currently treated as a subspecies of *Ypthima baldus* (FABRICIUS, 1775).

Remarks. This is the first record from Vietnam.

***Ypthima philomela peguana* EVANS, 1923**

(Figs. 2w, 3A, 6.1, 6.2, 6.3)

Ypthima philomela peguana EVANS, 1923 : 786. Syntypes ♂♀, N. Burma (BMNH) [Syntype ♂, B.M. Type No. Rh. 6195♂, syntype ♀, B.M. Type No. 6196♀ examined].

Ypthima philomela peguana : MONASTYRSKII & DEVYATKIN, 2003 : 20. C., S.

Specimens examined. **C. Vietnam (S).** Lam Dong province : Da Lat (950m), 3♂4♀(dsf), 14. iii. 1997 (MN) (1♂, KMNHIR 200,208) ; Da Lat (1,200m), 1♂(wsf), 29-31. vii. 2001 (Y. KISHIDA). **S. Vietnam.** Binh Phuoc province : Loc Ninh, 2♂, 4. ix. 1967 (A. Bedford RUSSELL, in BMNH colln). Dong Nai province : Cat Tien National Park, 3♂(wsf), 18. xi. 1999 (ALM).

FL. ♂, 16.5-18.0mm ; ♀, 17.0-18.0mm.

Habitats. Cat Tien : scrubland and lowland forest edge ; grassland.

Bionomics. There are specimen records for March to April.

Distribution. Burma, Laos and Southern Vietnam.

Remarks. A new record from Vietnam. We consider the position of *tabella* to be ambiguous, but follow Talbot (1947) in retaining it as a subspecies of *philomela*.

The subspecies of *Ypthima philomela* LINNAEUS are listed below.

ssp. *philomela* (LINNAEUS, 1763)

Sumatra, Java, Bali

ssp. *peguana* EVANS, 1923

Burma, Laos, Vietnam

ssp. *tabella* MARSHALL, 1883

South India

***Ypthima lisandra lisandra* (CRAMER, [1780])**

(Figs. 2x, 6.6, 6.9)

Papilio lisandra CRAMER, [1780] : 11, pl. 293, figs. G[♀] (UP), H[♀] (UN). Syntype(s), S. China. [Specimen lost].

Ypthima lisandra lisandra : FRUHSTORFER, 1911 : 288, pl. 99, fig. e#2♂(UP). Manson Mountains, Tonkin ; METAYE, 1957 : 102. North Vietnam.

Ypthima lisandra f. *lisandra* : DUBOIS & VITALIS DE SALVAZA, 1924 : 27. Tonkin.

Ypthima lisandra lisandra : MONASTYRSKII & DEVYATKIN, 2003 : 20. C., S.

Specimens examined. **C. Vietnam (C).** Gia Lai province : Play Ku (600m), 2♂1♀(dsf), 7. iii. 1997 (MN). **C. Vietnam (S).** Ninh Thuan province : Nui Chua Nature Reserve, 1♂, 12. x. 2003 (ALM). Dac Lac province : Yok Don National Park, 1♂1♀, vi. 1998 (HVH) ; Ban Don (400m), 1♀(dsf), 10. iii. 1997 (MN). Lam Dong province : Da Lat (950m), 3♂(dsf), 14. iii. 1997 (MN) (1♂, KMNHIR 200, 209) ; Bao Lam, 1♀, 2. v. 2003 (BHM). S. Annam, 3♂, 9. ii. 1929 (LEECH colln, MNHN). **S. Vietnam.** Tay Ninh province : Lo Go Sa Mat Nature Reserve, 1♂, 31. x. 2001 (ALM).

Distribution record taken from the literature. N. Vietnam (Tonkin). Son La province : [Mau Son Mountains] (= Mai

Son?) (FRUHSTORFER, 1911).

FL. ♂, 18.5-20.0mm ; ♀, 18.0-20.0mm.

Habitats. Nui Chua : grassland and secondary forest edge at 400-500m ; Lo Go Sa Mat : evergreen forest edge (grassland) at 20-30m.

Bionomics. There are specimen records for February and March. BASCOMBE *et al.* (1999) mention that *lisandra* in Hong Kong has habits like those *baldus*, but unlike that species it is also found on several of the smaller islands.

Distribution. Southern China, Hainan, Vietnam.

Taxonomy. SHIRÔZU & SHIMA (1979) treated *avanta* as a species distinct from *lisandra* on the basis of ♀ genitalia. We do not follow this treatment because could not find any differences between specimens from S. China and Indochina. Further investigation is needed to resolve this matter. The subspecies of *Ypthima lisandra* (CRAMER) are tentatively listed below.

- ssp. *lisandra* (CRAMER, [1780])
S. China, Hainan, Vietnam
- ssp. *bara* EVANS, 1923
Sikkim to Burma, Thailand, Laos
- ssp. *avanta* MOORE, 1874
N.W. Himalayas to Nepal
- ssp. *vaneckeai* ROEPKE, 1936
Java, Bali, Lombok (1 ♀, new record)

Asterope-group

Ypthima norma annamitica FRUHSTORFER, 1911

(Figs. 2y, 6.12, 6.15)

Ypthima asterope annamitica FRUHSTORFER, 1911 : 286, pl. 99, fig. c#5 ♂(UN). Lectotype ♂, Xom Gom, South Annam (BMNH) [lectotype designated by UÉMURA, 1985 : 181] [examined] ; METAYE, 1957 : 102. Central Vietnam.

Ypthima asterope f. *annamitica* : DUBOIS & VITALIS DE SALVAZA, 1924 : 27. South Annam.

?[*Ypthima asterope* f. *annamitica* : LEMÉE, 1950 : 7. Hagiang, Haut-Tonkin (Nord-Vietnam).]

Ypthima norma annamitica : UÉMURA, 1985 : 181. South Annam : Dalat ; Lang Bian ; [Xom Gom].

Ypthima norma annamitica : MONASTYRSKII & DEVIATKIN, 2003 : 20. C.

Specimens examined. **C. Vietnam (S).** Lam Dong province : Da Lat (5000'), 1 ♂(wsf), 26-30. viii. 1966 (A. Bedford RUSSELL) ; Plateau du Lang Bian (5000'), 1 ♂(dsf), 9. ii. 1900 (H. FRUHSTORFER) ; [Xom Gom], 1 ♂(lectotype, dsf), (H. FRUHSTORFER) ; "Fimnon" or "Fimnom" (Lam Dong) [Dalat plateau], 2 ♂, 2. x. 1929, 19. v. 1932 (LEECH colln, MNHN) ; Bi Doup montane area (1300m), 1 ♀, 3. iv. 2002 (ALM, in colln of TME).

FL. ♂, 15.0-17.0mm ; ♀, 17.0mm.

Bionomics : Nominate subspecies from Hong Kong inhabits

grassland on the hill slopes and summits.

Distribution : Southern region of Central Vietnam (Dalat).

Remarks : So far not found in the other Vietnam sites, although it is known from S. China (ssp. *norma*) and Laos (ssp. *burmana*). Subspecies *annamitica* is distinguishable from all other subspecies - the underside ground colour is more whitish ; subapical ocellus is rather oval (UÉMURA, 1985). LEMÉE's (1950) recorded as *Y. asterope* f. *annamitica* from Hagiang, N. Vietnam, is possibly misidentification of *Y. huebneri*. Need for confirmation.

The subspecies of *Ypthima norma* Westwood are listed below.

- ssp. *norma* WESTWOOD, [1851]
Southern China
- ssp. *annamitica* FRUHSTORFER, 1911
South Vietnam
- ssp. *burmana* EVANS, 1923
Burma, N. Thailand, Laos, W. China
- ssp. *posticalis* MATSUMURA, 1909
Taiwan
- ssp. *aei* SHIRÔZU & SHIMA, 1977
Luzon
- ssp. *pusilla* FRUHSTORFER, 1911
Sulawesi (Celebes), Butung
- ssp. *moluccana* UÉMURA, 1985
Ambon, Buru
- ssp. *florensis* SNELLEN, 1891
Flores, Alor
- ssp. *sumbana* UÉMURA, 1985
Sumba
- ssp. *incertae sedis*
Timor

Chenu-group

Ypthima praenubila praenubila LEECH, 1891

(Figs. 2z, 8.1-8.4)

Ypthima praenubila LEECH, 1891 : 66. Syntypes 5 ♂6 ♀, Ta-chien-lu, Chia-kou-ho, Moupin, Omei-shan, Wa-shan, Szechwan, W. China ; Kiukiang, Kiangsi, C. China (BMNH, B.M. Type No. Rh. 3372-3382) ; IKEDA *et al.*, 1999 : 57, figs. 7-9 ♂(UP), 7-10 ♂(UN), 7-11 ♀(UP), 9-36(♂ genitalia). Cuc Phuong.

Ypthima praenubila praenubila : MONASTYRSKII & DEVIATKIN, 2003 : 20. N. (Ninh Binh, Tuyen Quang).

Specimens examined. **N. Vietnam.** Tuyen Quang province : Na Hang, Van Lang top 820m, 1 ♂, 26. v. 2003 (BXP). Lao Cai province : Sa Pa, Ta Giang Phin, 1 ♂, 10. v. 2001 (M. WAKABAYASHI colln). Vin Phu province : Tam Dao, 1 ♂, 3. v. 1998 (M. WAKABAYASHI colln) (KMNHIR 200, 210), 1 ♀, 15. v. 1999 (M. WAKABAYASHI colln). Ninh Binh province : Cuc Phuong National Park, 1 ♂1 ♀, 27. v. 1996 (MN).

FL. ♂, 30.0-30.5mm ; ♀, 31.0mm.

Habitats. Na Hang : forest at 800m ; Cuc Phuong : lowland forest on limestone. The hilly limestone area in the park is not above 600m.

Bionomics. According to BASCOMBE *et al.* (1999) the Hong Kong population occurs most commonly on the wooded slopes and summit of Victoria Peak.

Distribution. Central and Western China, Hainan, North Vietnam.

The subspecies of *Ypthima praenubila* LEECH are listed below.

ssp. *praenubila* LEECH, 1891

C. W. & S. China, Hainan, N. Vietnam

ssp. *kanonis* MATSUMURA, 1929

Taiwan

Huebneri-group

***Ypthima huebneri* KIRBY, 1871**

(Figs. 2aa, 6.13, 6.14)

Ypthima huebneri KIRBY, 1871 : 95. (Replacement name).

Ypthima huebneri huebneri : FRUHSTORFER, 1911 : 287, pl. 99, fig. e#3 ♂(UN). Annam ; Tonkin ; GODFREY, 1919 : 466. Daban, S. Annam ; METAYE, 1957 : 102. North and Central Vietnam.

Ypthima huebneri f. huebneri : DUBOIS & VITALIS DE SALVAZA, 1924 : 27. Annam ; Tonkin.

Ypthima huebneri f. honora : DUBOIS & VITALIS DE SALVAZA, 1924 : 27. Indochina.

Ypthima huebneri : IKEDA *et al.*, 1999 : 57, figs. 7-6 ♂(UP), 7-7 ♂(UN), 7-8 ♀(UP), 9-35(♂genitalia). Cuc Phuong.

Ypthima huebneri : MONASTYRSKII & DEVYATKIN, 2003 : 20. N., C., S.

Specimens examined. **N. Vietnam.** Bac Can province : Ba Be National Park, 2 ♂ (wsf), 12. xi. 1997 (ALM), 1 ♂(wsf), 17. ix. 1996, 1 ♀(wsf-dsf), 21. iii. 1997 (ALM, in colln of TME). Ninh Binh province : Cuc Phuong National Park : 2 ♂, 10. vi. 1998, 12. x. 1997 (ALM). **C. Vietnam (N).** Nghe An province : Pu Hoat Nature Reserve, 4 ♂2 ♀, 22. x -18. xi. 1999 (FR) ; Pu Mat Nature Reserve, 2 ♂, 6-17. ix. 1998 (FFI). **C. Vietnam (C).** Ha Tinh province : Vu Quang Nature Reserve, 1 ♂, 28. vii. 1997 (ALM). Thua Thien Hue province : Bach Ma National Park, 9 ♂, 12-18. vii. 1996 (ALM, BXP), 1 ♂(wsf), 14. vii. 1996 (KMNHIR 200,211), 2 ♀(wsf), 18. vii. 1996 (TME colln). Quang Nam province : Ba Na Nature Reserve, 8 ♂1 ♀, 31. vii-30. viii. 1995 (FR). Kon Tum province : Kon Plong Forest complex, 2 ♂, 30. xii. 2000, 13. i. 2001 (ALM). Gia Lai province : Kon Cha Rang Nature Reserve, 1 ♂, 11. iii. 1999 (ALM) ; Play Ku (600m), 1 ♀(dsf), 7. iii. 1997 (MN). **C. Vietnam (S).** Lam Dong province : Da Lat (950m), 1 ♂(dsf), 14. iii. 1997 (MN) ; Bao Lam Forest complex, 1 ♂1 ♀, 30. iv

-3. v. 2003 (BHM). **S. Vietnam.** Dong Nai province : Cat Tien National Park, Cat Loc Sector, 1 ♂, 10. v. 2000. Tay Ninh province : Lo Go Sa Mat Nature Reserve, 1 ♂, 1. xi. 2001 (ALM). Phu Quoc Island, 1 ♂, 13. i. 1967 (A. Bedford RUSSELL, in BMNH colln).

FL. ♂, 17.0-17.5mm ; ♀, 17.0-18.0mm.

Habitats. Ba Be : forest edge, secondary vegetation ; Pu Mat : secondary forest up to 600m ; Vu Quang : secondary forest at 200m ; Kon Cha Rang : secondary vegetation at 900m ; Lo Go Sa Mat : secondary lowland forest edge at 10 -20m.

Bionomics. It frequents the roadsides and secondary growth.

Distribution. From throughout Peninsular India to Assam, Burma, Malaya, Singapore, Thailand, Laos and Vietnam.

Remarks. The species has two distinct seasonal forms. Dsf lacks ocelli on the UnH.

Megalomma-group

***Ypthima frontierii* UÉMURA & MONASTYRSKII, 2000**

(Figs. 2bb-cc, 7.1, 7.2)

Ypthima frontierii UÉMURA & MONASTYRSKII, 2000 : 150-153, figs. 1a-c (androconia), 2 (♂ genitalia), 4 (Paratype ♂, wsf, UP), 5 (Ditto, UN), 6 (Holotype ♂, dsf, UP), 7 (Ditto, UN), 8 (Paratype ♀, dsf, UP), 9 (Ditto, UN). Holotype ♂ (dsf), Sa Pa, N. Vietnam (TME) [examined].

Ypthima frontierii : MONASTYRSKII & DEVYATKIN, 2003 : 20, pl. 2, fig. 4 ♂(UN). N. (Lao Cai).

Specimens examined. **N. Vietnam.** Lao Cai province : Sa Pa (2,000m), 3 ♂1 ♀(dsf), iii. 1995 (FR) ; Hoang Lien Nature Reserve (1,600m), 1 ♂(dsf), 19. ii. 1998 (FR), 3 ♂1 ♀(wsf), 22-25. viii. 1998 (VVL) (1 ♂, KMNHIR 200,212), 1 ♂(wsf), 31. vii. 1998 (BXP).

FL. ♂, 21.0-22.0mm ; ♀, 22.0-23.0mm.

Habitats. Hoang Lien : secondary vegetation and grassland at 1,600 to 2,000m.

Bionomics. It has been recorded in spring and summer.

Distribution. N. Vietnam and Western China (Yunnan, Pingbian, 1 ♂1 ♀, **new record**).

Newara-group

***Ypthima sarcaposa* FRUHSTORFER, 1911 stat. nov.**

(Figs. 2dd, 3C, 7.3)

Ypthima newara sarcaposa FRUHSTORFER, 1911 : 291. Syntypes, Tungo, Tenasserim (BMNH) [Syntype ♂, Tenasserim, Tandong, 4,000 ft., Mai, FRUHSTORFER leg., examined].

Ypthima sarcaposa : MONASTYRSKII & DEVYATKIN, 2003 : 20. N. (Ha Tay, Bac Can).

Specimens examined. **N. Vietnam.** Bac Can province : Ba

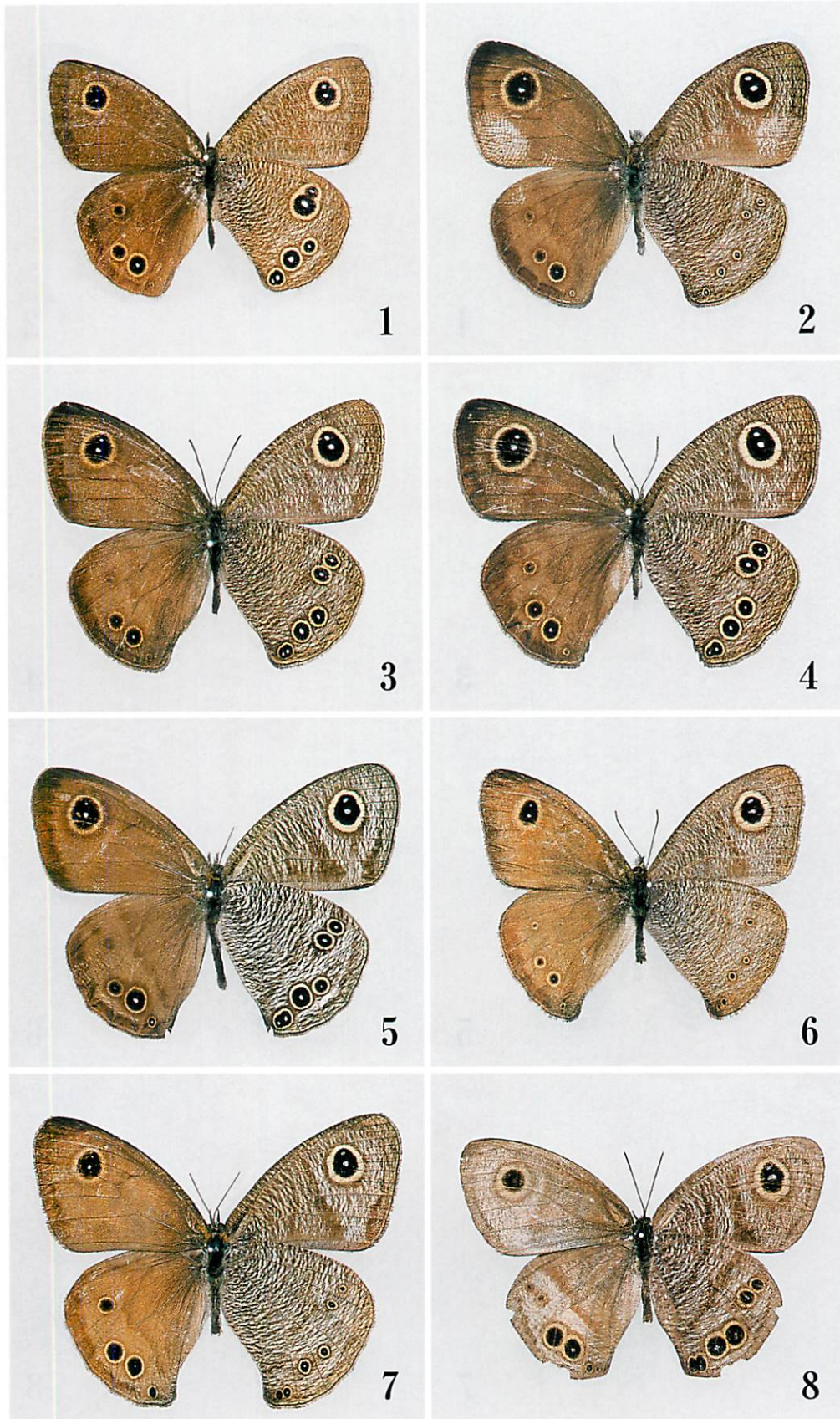


Fig. 4. Upper- and underside of *Ypthima* species : 1, *sakra leechi* ♂ (Hoang Lien) ; 2, *persimilis* ♂ (dsf) (Sa Pa) ; 3, ditto ♂ (wsf) (Sa Pa) ; 4 ditto ♀ (wsf) (Sa Pa) ; 5 *atra* ♂ (Tuyen Quang) ; 6, *evansi evansi* ♂ (Bi Doup) ; 7, *dohertyi mossmani* ♂ (Ngoc Linh) ; 8, *pseudosavara* ♂ (holotype) (Ben En).

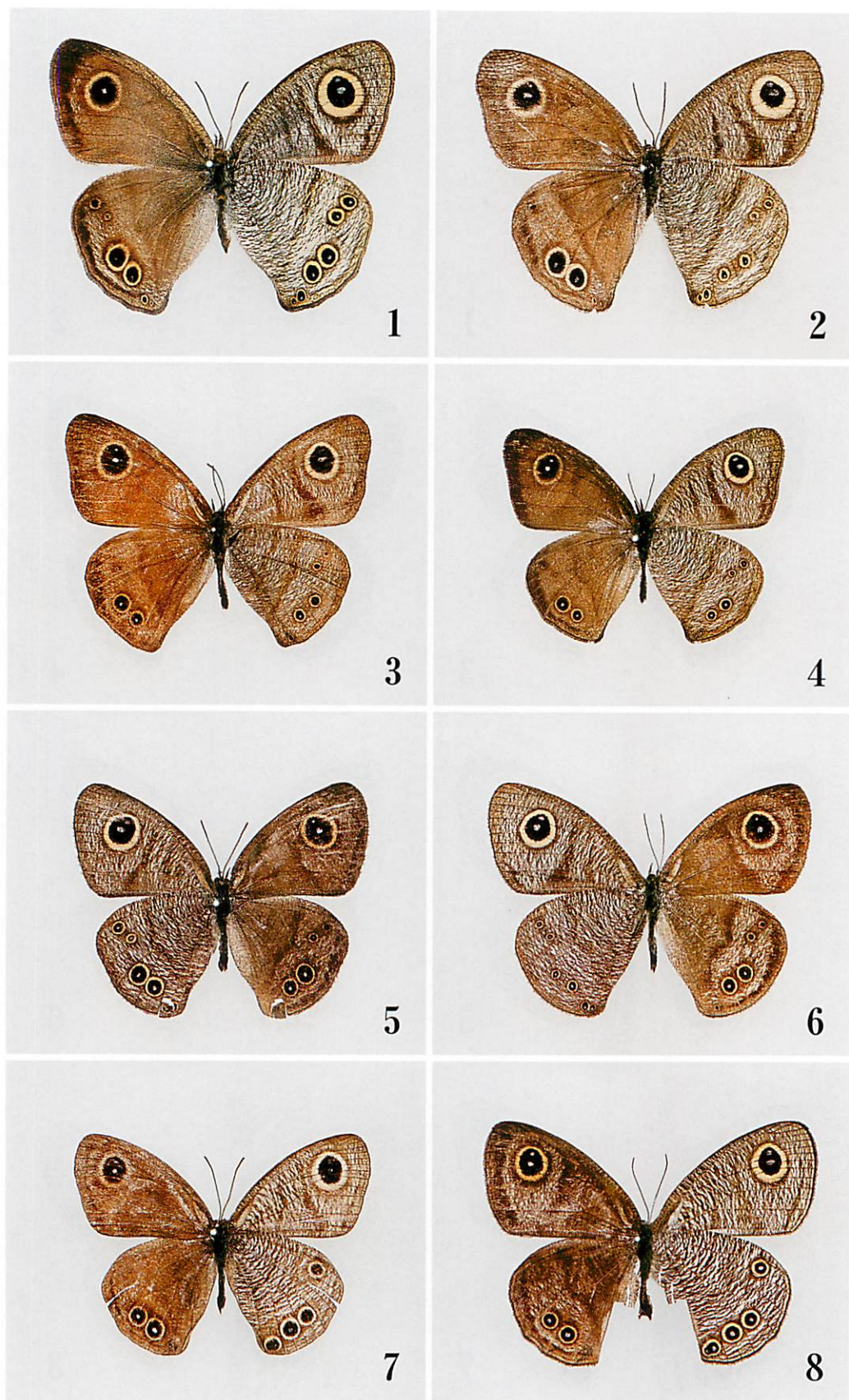


Fig. 5. Upper- and underside of *Ypthima* species : 1, *savara savara* ♂ (Bao Loc) ; 2, *savara tonkiniana* ♂ (Ba Be) ; 3, *similis* ♂ (dsf) (Kon Cha Rang) ; 4, ditto ♂ (wsf) (Lam Dong) ; 5, *affectata* ♂ (wsf) (Na Hang) ; 6, ditto ♂ (dsf) (Ba Be) ; 7, *tappana selinuntoides* ♂ (Huong Son forest) ; 8, ditto ♀ (Vu Quang).

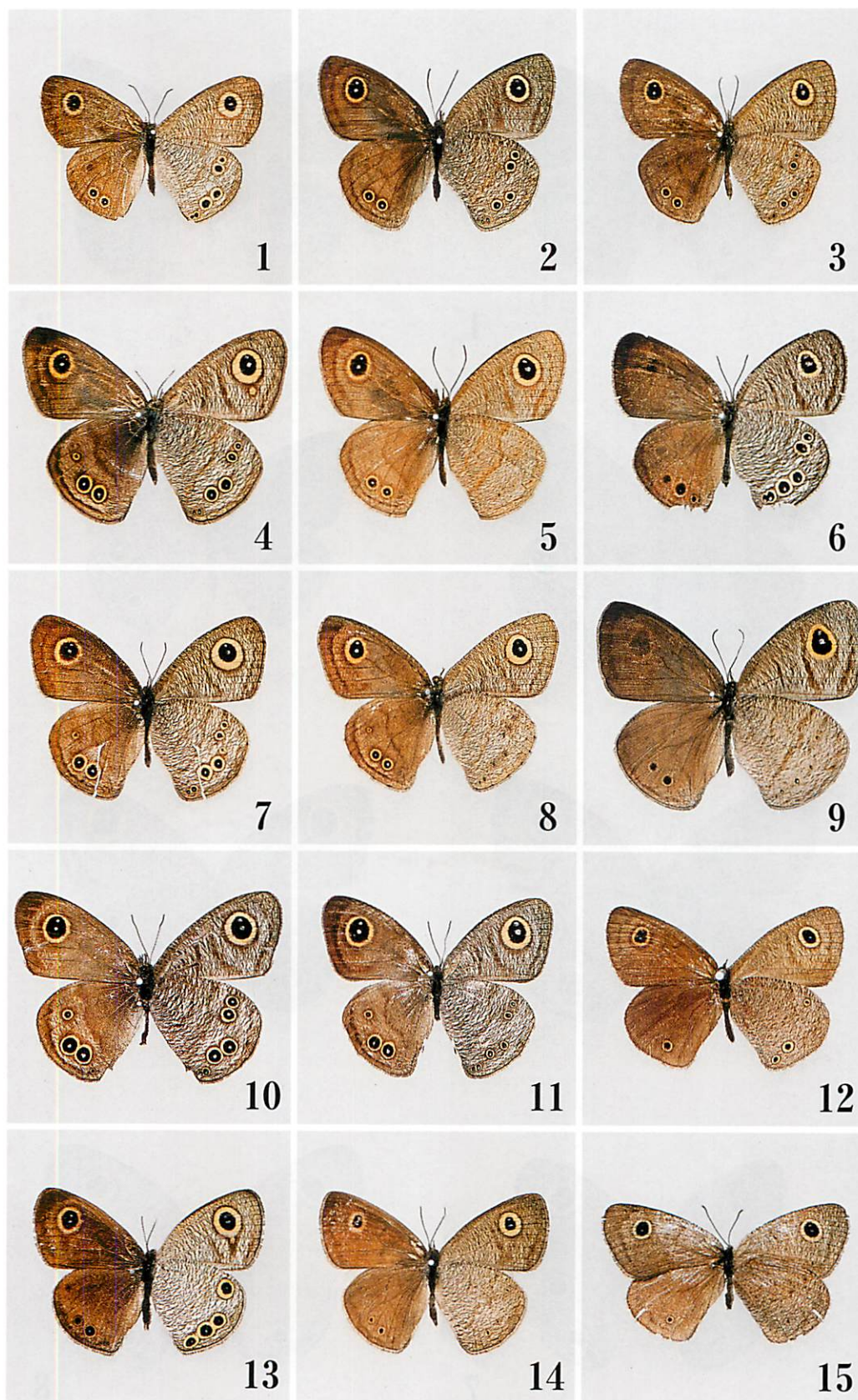


Fig. 6. Upper- and underside of *Ypthima* species : 1, *philomela peguana* ♂(wsf) (Cat Tien) ; 2, ditto ♂(wsf) (Da Lat) ; 3, ditto ♂(dsf) (Da Lat) ; 4, *baldus baldus* ♂(wsf) (Bao Loc) ; 5, ditto ♂(dsf) (Da Lat) ; 6, *lisandra lisandra* ♂(wsf) (Tay Ninh) ; 7, *singorensis indosinica* nom. nov. ♂(wsf) (Ngoc Linh) ; 8, ditto ♂(dsf) (Play Ku) ; 9, *lisandra lisandra* ♂(dsf) (Da Lat) ; 10, *nebulosa* ♂(wsf) (Tam Dao) ; 11, ditto ♂(dsf) (Ba Be) ; 12, *norma annamitica* ♂(Da Lat) ; 13, *huebneri* ♂(wsf) (Bach Ma) ; 14, ditto ♂(dsf) (Da Lat) ; 15, *norma annamitica* ♀(Bi Doup).

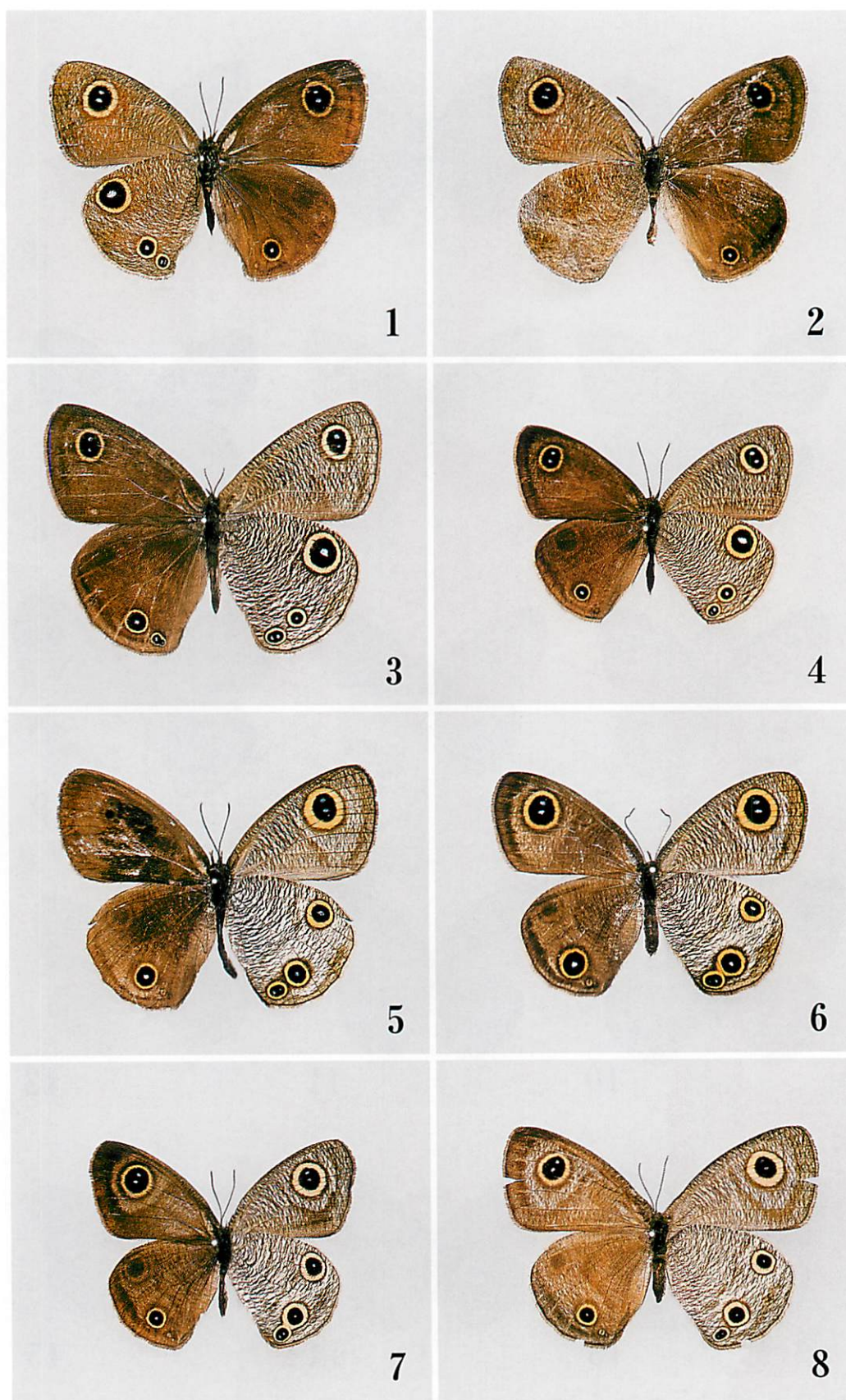


Fig. 7. Upper- and underside of *Ypthima* species : 1, *frontierii* ♂(wsf) (paratype) (Hoang Lien) ; 2, ditto ♂(dsf) (holotype) (Sapa) ; 3, *sarcaposa* ♂(Ba Vi) ; 4, *confusa* ♂(Hoang Lien) ; 5, *imitans* ♂(Vu Quang) ; 6, ditto ♀(Vu Quang) ; 7, *watsoni inouei* ♂(Tay Ninh) ; 8, ditto ♀(Tay Ninh).

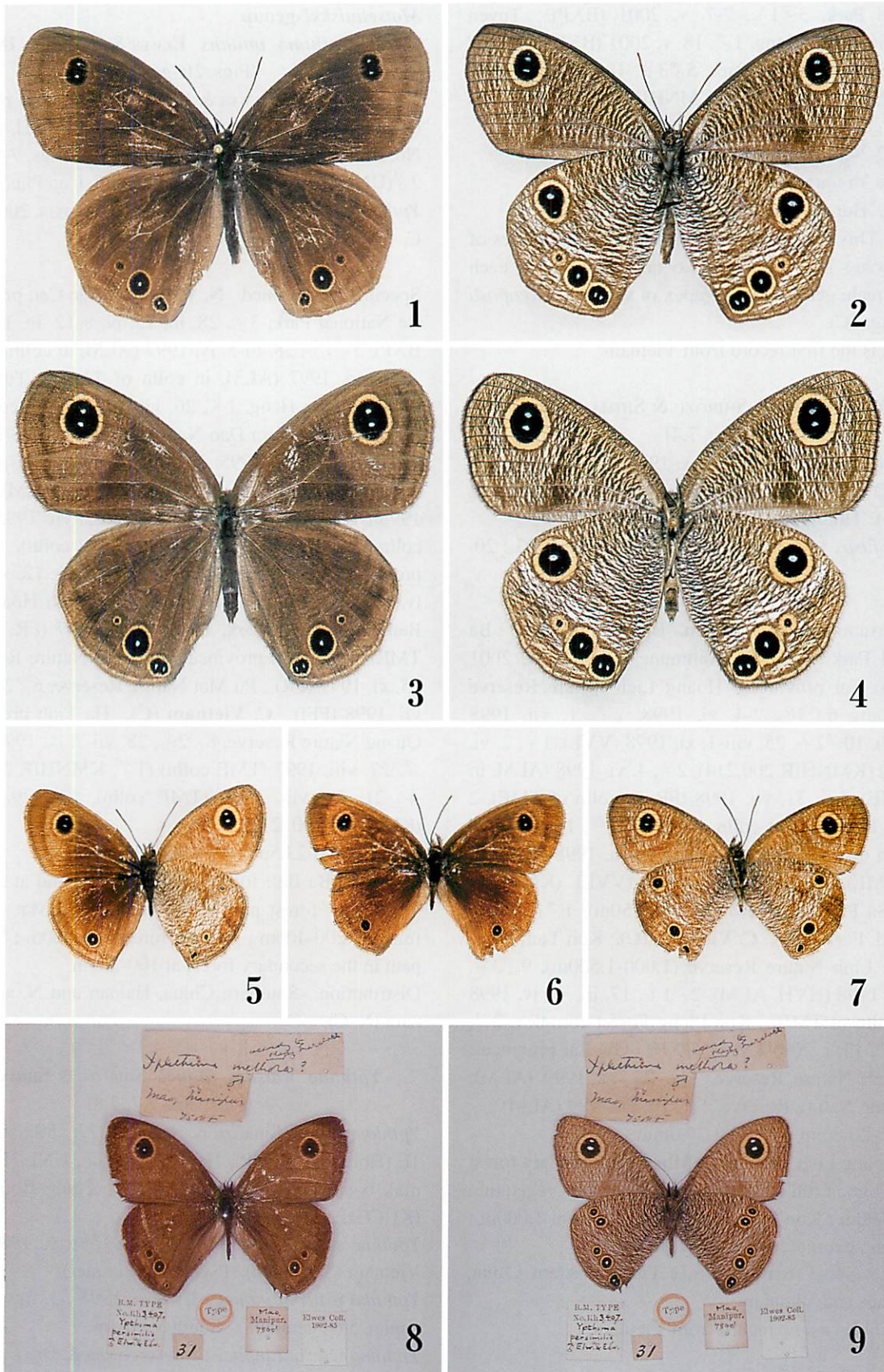


Fig. 8. Upper- and underside of *Ypthima* species : 1, *praenubila praenubila* ♂ UP (Tam Dao) ; 2, ditto UN ; 3, *praenubila praenubila* ♀ UP (Tam Dao) ; 4, ditto UN ; 5, *daclaca* sp. nov. paratype ♂, UP & UN ; 6, ditto holotype ♂, UP ; 7, ditto UN ; 8, *Ypthima persimilis* Elwes & Edwards, 1893, syntype ♂, UP, Mao, Manipur, (BMNH, B.M. Type No. Rh. 3407 ♂, photo by M. NISHIMURA) ; 9, ditto UN.

Be National Park, 3♂1♀, 2-7. v. 2001 (BXP). Tuyen Quang province : Na Hang, 1♂, 18. v. 2001 (BXP). Ha Tay province : Ba Vi National Park, 5♂3♀, 18. v-14. vi. 1996 (ALM, BXP), 1♂, 18. v. 1996 (KMNHIR 200,213), 1♂, 25. v. 1996, 2♂, 8, 14. vi. 1996.

FL. ♂, 20.0-24.0mm ; ♀, 24.5mm.

Habitats. Ba Vi : grassland at 300-400m.

Distribution. Burma, N. Vietnam.

Taxonomy. This species has been treated as a subspecies of *newara* MOORE, 1874. These two taxa differ from each other in the male genitalia. The apex of valva of *sarcaposa* is serrate (Fig. 3C).

Remarks. It is the first record from Vietnam.

***Ypthima confusa* SHIRÔZU & SHIMA, 1977**

(Figs. 2ee, 7.4)

Ypthima confusa SHIRÔZU & SHIMA, 1977 : 504-507, figs. 1 C♂(UP), 1D♂(UN), 1G(androconia), 3(♂genitalia), 5A-E (♀ genitalia). Holotype ♂, Nepal (KUCGE).

Ypthima confusa : MONASTYRSKII & DEVYATKIN, 2003 : 20. N., C.

Specimens examined. **N. Vietnam.** Bac Can province : Ba Be National Park, Lung Vi Commune, 1♂, 17. iv. 2001 (BXP). Lao Cai province : Hoang Lien Nature Reserve (1,400-1,600m), 6♂3♀, 2-4. vi. 1998, 2♂, 1. vii. 1998 (ALM, BXP), 10♂2♀, 25. viii-1. xi. 1998 (VVL), 1♀, 2. vi. 1998 (ALM) (KMNHIR 200,214), 2♀, 4. vi. 1998 (ALM, in colln of TME), 1♂, 31. vii. 1998 (FR, in colln of TME), 2♂, 13. viii. 1998 (FR, in colln of TME), 1♀, 1. viii. 1998 (FR, in colln of TME), 3♂, 22, 30, 31. viii. 1998 (VVL, in colln of TME), 1♂, 23. viii. 1998 (VVL) (KMNHIR 200,215) ; Sa Pa, O Quy Ho (1,650-1,750m), 1♂1♀, 4-6. viii. 2000 (M. FURUKAWA). **C. Vietnam (C).** Kon Tum province : Ngoc Linh Nature Reserve (1,000-1,500m), 9♂3♀, 17. iii-9. iv. 1998 (HVH, ALM), 2♂1♀, 17. iii - 9. iv. 1998 (ALM, in colln of TME) ; Kon Plong Forest complex, 2♂, 30, xii. 2000, 13. i. 2001 (ALM, BXP). Gia Lai province : Kon Ka Kinh Nature Reserve, 1♂, 23. iv. 1999 (ALM); Kon Cha Rang Nature Reserve, 1♂, 10. iii. 1999 (ALM).

FL. ♂, 17.5-20.0mm ; ♀, 19.0-20.0mm.

Habitats. Hoang Lien : Hamrong Mtn. and secondary forest at 1,700m ; Ngoc Linh : grassland and secondary vegetation at 900 to 1,600m ; Kon Plong : evergreen forest at 1,000m ; Kon Ka Kinh : evergreen forest at 1,600m.

Distribution. Nepal to Burma, S.E. Tibet, Western China, Thailand, Laos and Vietnam.

Remarks : This is a new record from Vietnam.

Motschulskyi-group

***Ypthima imitans* ELWES & EDWARDS, 1893**

(Figs. 2ff-gg, 7.5, 7.6)

Ypthima imitans ELWES & EDWARDS, 1893 : 17, pl. 3, fig. 53 (♂ genitalia). Holotype ♂, Hainan (BMNH, B.M. Type No. Rh. 3371♂) ; IKEDA *et al.*, 1999 : 57, figs. 7-1♂(UP), 7-2♂(UN), 7-3♀(UP), 9-33(♂genitalia). Cuc Phuong.

Ypthima imitans : MONASTYRSKII & DEVYATKIN, 2003 : 20. N., C.

Specimens examined. **N. Vietnam.** Bac Can province : Ba Be National Park, 3♂, 28. iii, 12. iv, 8-12. iv. 1997 (ALM, BXP), 5♂1♀, 28. iii-5. iv. 1997 (ALM, in colln of TME), 1♂, 6. vi. 1997 (ALM, in colln of TME). Tuyen Quang province : Na Hang, 1♀, 26. vii. 1996 (TME colln). Vinh Phu province : Tam Dao National Park, 1♂, 23-25. v. 1996 (MN), 1♂, 30. iv. 1995, 1♂1♀, 24. vi. 1995, 3♂3♀, 1-23. vii. 1995, 5♂6♀, 16. ix-26. x. 1995 (all ALM), 1♂, 8. x. 1995 (ALM, in colln of TME), 1♀, 22. vii. 1995 (ALM, in colln of TME), 1♀, 26. x. 1996 (TME colln). Ninh Binh province : Cuc Phuong National Park, 2♂, 12. x. 1997, 19. iv. 1998 (ALM). **C. Vietnam (N).** Thanh Hoa province : Ben En National Park, 1♀, 11. vii. 1997 (FR, in colln of TME). Nghe An province : Pu Hoat Nature Reserve, 1♀, 25. xi. 1999 (FR) ; Pu Mat Nature Reserve, 6♂2♀, 26. v-8. vii. 1998 (FFI). **C. Vietnam (C).** Ha Tinh province : Vu Quang Nature Reserve, 8♂2♀, 28. vii-7. ix. 1997 (ALM), 2♂, 27. viii. 1997 (TME colln) (1♂, KMNHIR 200, 216), 2♀, 21, 28. viii. 1997 (TME colln), 1♀, 29. viii. 1997 (KMNHIR 200, 217).

FL. ♂, 20.0-23.5mm ; ♀, 20.0-23.5mm.

Habitats. Ba Be : forest edge and grassland at 200-300m ; Tam Dao : forest path at 800-900m ; Pu Mat : secondary forest at 200-400m ; primary forest at 1,000m ; Vu Quang : path in the secondary forest at 100-200m.

Distribution. Southern China, Hainan and N. and C. Vietnam (N, C).

***Ypthima watsoni inouei* SHIRÔZU & SHIMA, 1977**

(Figs. 2hh, 7.7, 7.8)

Ypthima inouei SHIRÔZU & SHIMA, 1977 : 507-509, text-fig. 1E (Holotype ♂, UP), 1F (Holotype ♂, UN), 1H (androconia), 6 (♂genitalia). Holotype ♂, Trang Bom, Vietnam (KUCGE).

Ypthima watsoni watsoni : AOKI & UÉMURA, 1984 : 86-87. Vietnam (S. Annam). (Synonym : *inouei*).

Ypthima watsoni inouei : UÉMURA, 1998 : 3, figs. 1h (androconia), 5 (♂genitalia). South Vietnam.

Ypthima watsoni inouei : MONASTYRSKII & DEVYATKIN, 2003 : 20. S.

Specimens examined. **S. Vietnam.** Dong Nai province :

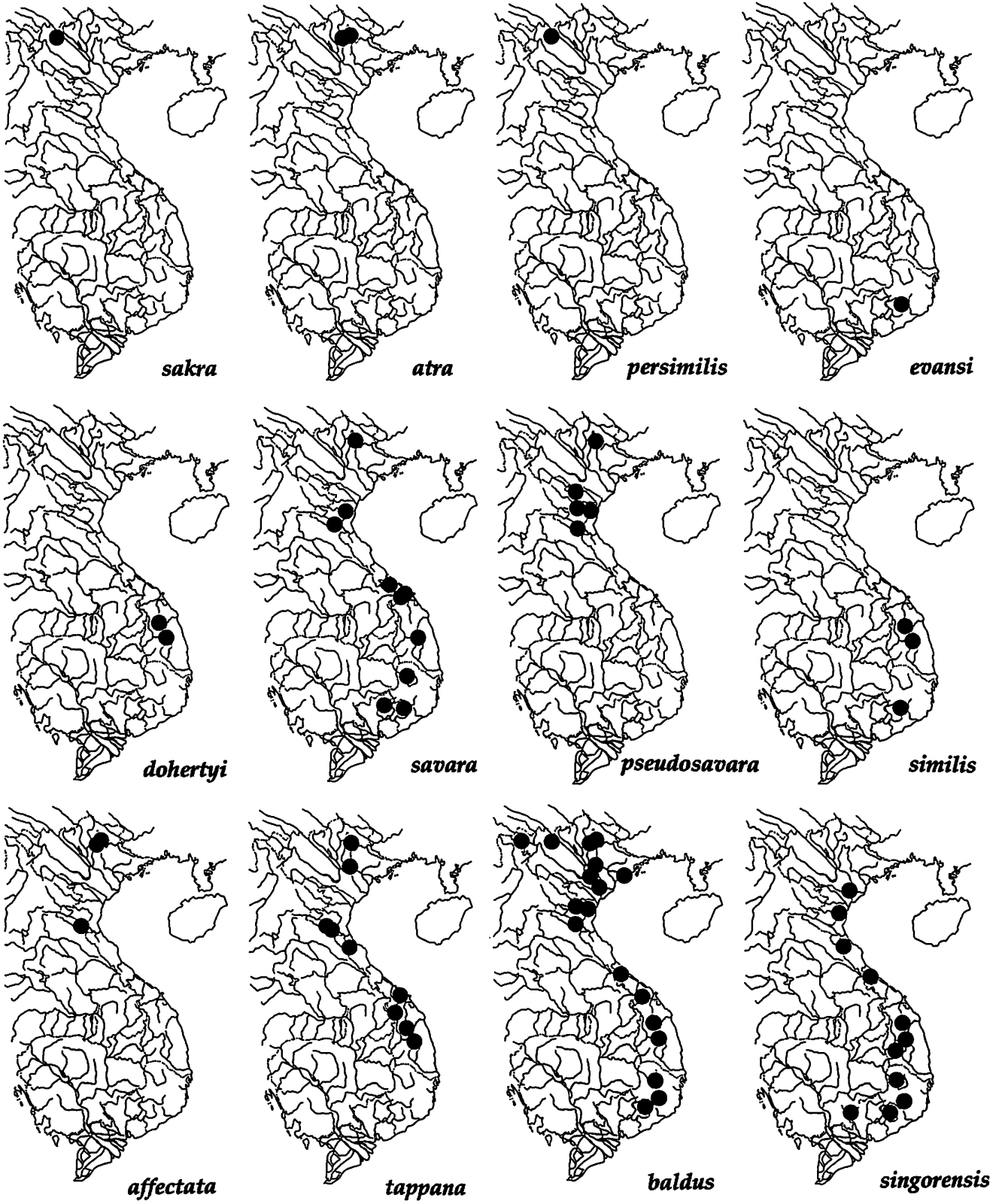


Fig. 9. Distribution Maps (1). Solid circles represent records based on specimens.

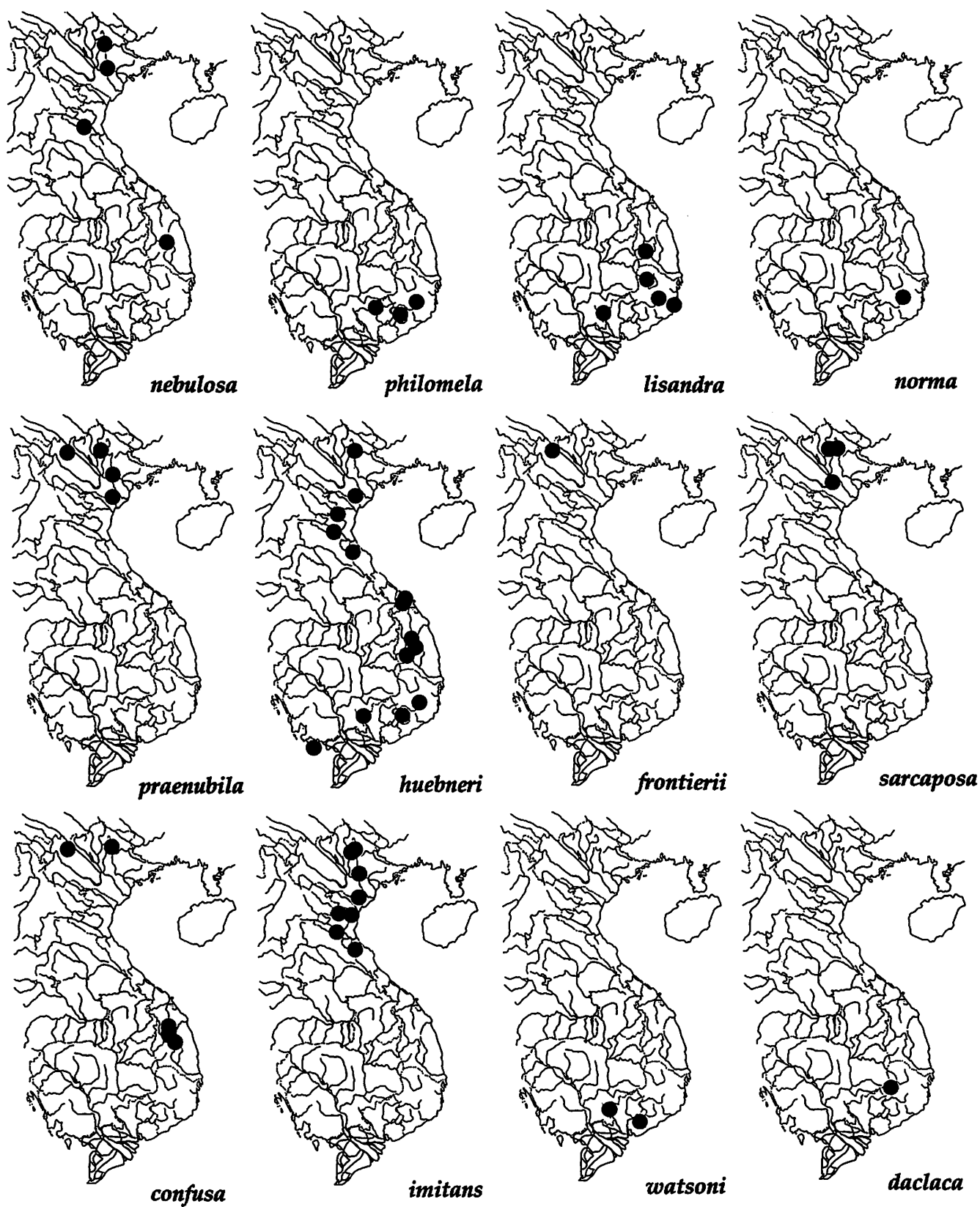


Fig. 10. Distribution Maps (2). Solid circles represent records based on specimens.

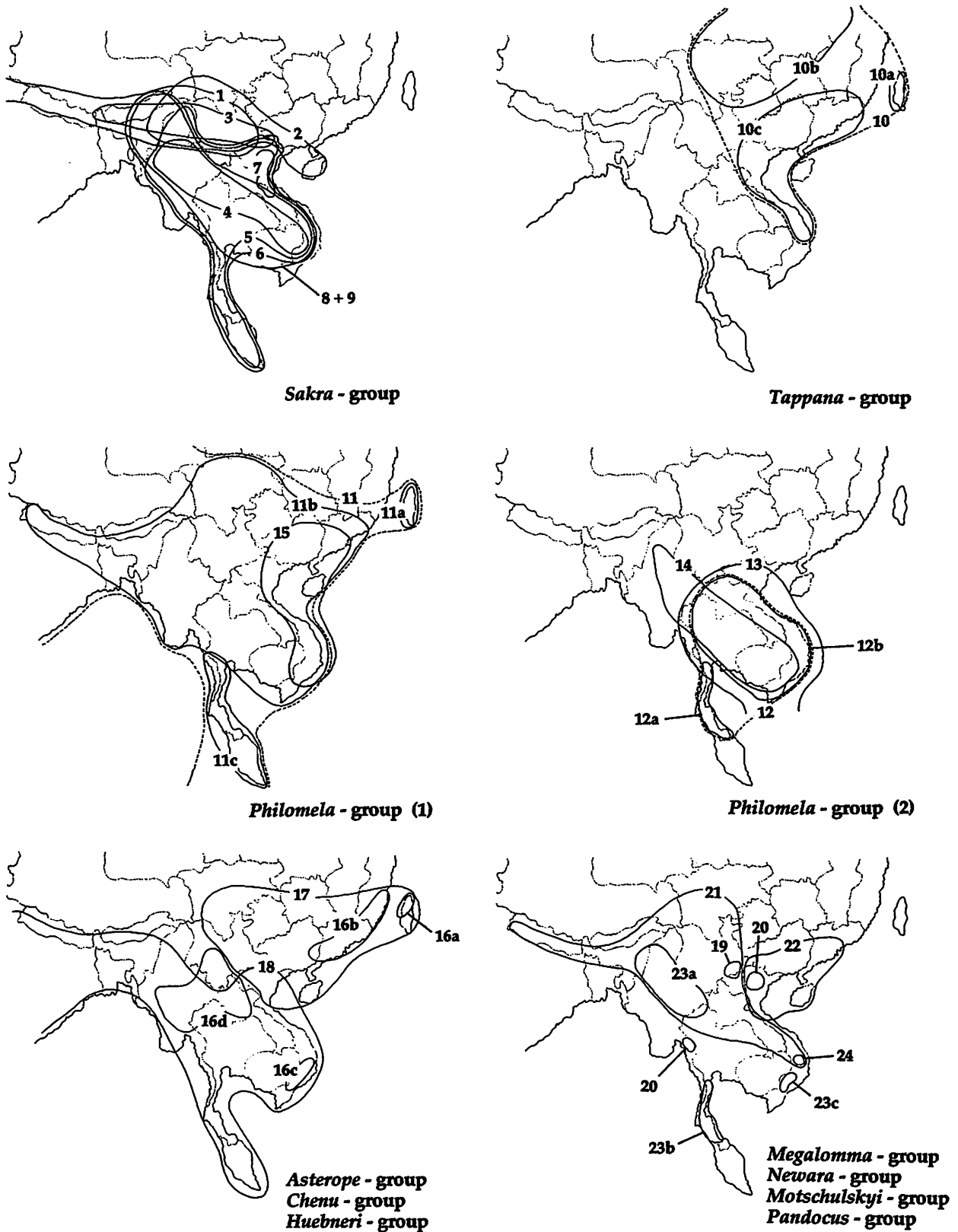


Fig. 11. Distribution Maps of *Ypthima* species (3). 1, *sakra* ; 2, *atra* ; 3, *persimilis* ; 4, *evansi* ; 5, *dohertyi* ; 6, *savara* ; 7, *pseudosavara* ; 8 + 9, *similis* & *affectata* ; 10, *tappana* ; 10a, *tappana tappana* ; 10b, *tappana continentalis* ; 10c, *tappana selinuntioides* ; 11, *baldus* ; 11a, *baldus zodina* ; 11b, *baldus baldus* & *baldus gallienus* ; 11c, *baldus newboldi* ; 12, *singorensis* ; 12a, *singorensis singorensis* ; 12b, *singorensis indosinica* nom. nov. ; 13, *nebulosa* ; 14, *philomela peguana* ; 15, *lisandra lisandra* ; 16a, *norma posticalis* ; 16b, *norma norma* ; 16c, *norma annamitica* ; 16d, *norma burmana* ; 17, *praenubila* ; 18, *huebneri* ; 19, *frontierii* ; 20, *sarcaposa* ; 21, *confusa* ; 22, *imitans* ; 23a, *watsoni watsoni* ; 23b, *watsoni peninsulae* ; 23c, *watsoni inouei* ; 24, *daclaca* sp. nov.

Trang Bom, Station de Song Mai (60 km), 2♂, 2. vii. 1960, 21. iv. 1961 (Roger METAYE), both preserved in MNHN. Tay Ninh province : Lo Go Sa Mat Nature Reserve, 6♂3♀, 17. x-3. xi. 2001 (ALM) (1♂1♀, KMNHIR 200, 218).

FL. ♂, 18.5-21.0mm ; ♀, 20.0-21.0mm.

Distribution. S. Vietnam.

Remarks. All known specimens have been collected just in lowland areas of S. Vietnam.

The subspecies of *Ypthima watsoni* (MOORE, [1893]) are listed below.

ssp. *watsoni* (MOORE, [1893])

Manipur, Burma and N. Thailand

ssp. *peninsulae* AOKI & UÉMURA 1984

Peninsular Thailand

ssp. *inouei* SHIRÔZU & SHIMA, 1977

S. Vietnam.

Pandocus-group

Ypthima daclaca UÉMURA & MONASTYRSKII, sp. nov.

(Figs. 2ii, 3B, 8.5, 8.6, 8.7)

Ypthima daclaca : MONASTYRSKII & DEVYATKIN, 2003 : 20. C. (Dac Lac) (UÉMURA & MONASTYRSKII, in prep.)

♂(Figs. 8.5, 8.6, 8.7). *Upperside of forewing* : Ground colour umber brown ; inner and outer discal fasciae absent ; submarginal fascia dark, well developed ; marginal fascia distinct ; subapical ocellus large, slightly oblique, black, bipupilled and rather narrowly yellow-ringed ; fringe dark brown ; brand prominent. *Upperside of hindwing* : Ground colour umber brown ; inner and outer discal fasciae absent ; submarginal and marginal fasciae as on forewing ; unipupilled ocellus present in space 2, single minute ocellus present in space 1b ; fringe dark brown. *Underside of forewing* : Ground colour grayish-brown, closely and delicately striated with dark brown ; inner discal fascia absent ; outer discal fascia distinct, broadened posteriorly ; submarginal fascia distinct, which is fused with outer discal fascia in space 2 ; marginal fascia dark and distinct ; subapical ocellus large, slightly oblique, black, bipupilled and broadly yellow-ringed ; fringe dark brown. *Underside of hindwing* : Ground colour grayish-brown ; closely and delicately striated with dark brown ; inner discal fascia absent ; outer discal fascia distinct ; submarginal fascia present ; marginal fascia dark and distinct ; rather small single pupilled subapical ocellus present in space 6 ; small single pupilled subtoral ocellus present in space 2 ; bipupilled small ocellus present in space 1b ; fringe dark brown.

♀. Unknown.

Androconia (Fig. 2ii). Moderate size, bottle-like shaped base with very slender, prolonged neck.

♂*genitalia* (Fig. 3B). Tegumen in dorsal view rather long and narrowed posteriorly, posterior margin rather

strongly bulged and gradually sunk ; in lateral view distinctly higher than vinculum ; appendix angularis rather broad. Uncus subequal in length to tegumen, gradually tapering to apex ; in lateral view slightly curved ventrally. Fenestrula of a small membranous dorsal spot. Saccus less than $1/5 \times$ as long as ring. Aedeagus in lateral view nearly straight. Valva in lateral view rather narrow and very long, twisted at middle, apex strongly pointed ; costa continuous to narrow ampulla + harpe.

Length of forewing. ♂, 18.5-19.0 mm (n=2).

Geographical distribution. Southern part of Central Vietnam.

Holotype ♂, km 8 route Daclac (?), 10. iv. 1932, Ex. N. V. LICHY coll. (MNHN).

Paratype : 1♂, km 10 (pine Daclac), 8. v. 1935, Ex. N. V. LICHY coll. (TME).

Type Depository : Holotype preserved in Muséum National d'Histoire Naturelle, Paris.

Remarks. This new species belongs to the *pandocus*-group (*sensu* SHIRÔZU & SHIMA, 1979 ; SHIMA, 1988) and is most closely related to *Y. nigricans* SNELLEN, 1892 from Java and Bali. It seems to be distinguishable from all other known species of the *pandocus*-group by the following combination of characteristics. Smaller in size ; Termen of forewing weakly convex ; UpF large subapical ocellus well developed ; UpF outer yellow ring sharply defined ; UnH subtoral ocellus absent in space 3 ; brand markedly prominent ; androconia rather slender at base ; aedeagus in lateral view nearly straight.

DISCUSSION

The biogeographical position of Vietnamese *Ypthima*

Table 1 shows *Ypthima* species diversity in different regions of Vietnam. The species composition is most diverse in northern and central Vietnam (Tonkin and Annam). The fauna of *Ypthima* in central and north Annam is more similar to Tonkin's fauna, while the fauna of southern Annam (C. Vietnam (S)) is closer to that of Cochinchina (S. Vietnam). The degree of similarity between regions was measured using Sorenson's index of similarity, calculated as described by MAGURRAN (1988). This index is a measure of biodiversity, or between-habitat diversity. The index, CS, is given by the formula $CS = 2j/(a + b)$, where j = the number of shared species at the two sites compared, a = the number of species at site A, and b = the number of species at site B. High values of CS indicate a high degree of similarity between the assemblages at the pair of sites.

Countries of South-East Asia in which Vietnamese *Ypthima* species were also recorded are also shown in Table 1. Significant similarity indices are revealed between the

Table 1. Distribution of *Ypthima* species collected in Vietnam.

SPECIES	N. Vietnam	Central (N) Vietnam	Central (C) Vietnam	Central (S) Vietnam	S. Vietnam	Laos	Thailand	Burma	Sikkim	Nepal	Assam	S. & C. India	N.W. India	S.W. China	S.E. China & Hainan	Taiwan	Malaya	Sumatra	Java	Celebes	Borneo	Philippines
<i>sakra</i>	●						●	●	●	●	●		●	●								
<i>atra</i>	●										●				●							
<i>persimilis</i>	●								●		●											
<i>evansi</i>				●			●	●														
<i>dohertyi</i>			●			●	●	●			●						●					
<i>savara</i>	●	●	●	●	●	●	●	●									●					
<i>pseudosavara</i>	●	●																				
<i>similis</i>			●	●		●	●	●														
<i>affectata</i>	●	●									●											
<i>tappana</i>	●	●	●											●	●	●						
<i>baldus</i>	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		●	●
<i>singorensis</i>	●	●	●	●	●	●	●										●					
<i>nebulosa</i>	●	●	●			●	●	●										●				
<i>philomela</i>				●	●	●		●				●						●	●			
<i>lisandra</i>	●		●	●	●	●	●	●	●	●			●		●				●			
<i>norma</i>				●		●	●	●						●	●	●	●			●		●
<i>praenubila</i>	●													●	●	●	●					
<i>huebneri</i>	●	●	●	●	●	●	●	●	●	●	●	●					●					
<i>frontierii</i>	●													●								
<i>sarcaposa</i>	●							●														
<i>confusa</i>	●		●			●	●	●		●	●			●								
<i>imitans</i>	●	●	●												●							
<i>watsoni</i>					●		●	●			●											
<i>daclaca</i>				●																		
Total Number	17	9	11	10	7	14	19	23	7	15	16	10	9	31	13	11	8	7	9	8	4	5
Number of shared species	x	x	x	x	x	11	13	14	5	5	9	3	3	7	7	4	5	3	3	1	1	2

Table 2. Sorenson's similarity index comparing *Ypthima* species composition in Vietnam with those in South-East Asia.

	Entire Vietnam	N.Vietnam	C.Vietnam (N)	C.Vietnam (C)	C.Vietnam (S)	S.Vietnam
Laos	0.578	0.452	0.417	0.750	0.667	0.571
Thailand	0.571	0.514	0.428	0.642	0.571	0.480
Burma	0.595	0.400	0.242	0.485	0.485	0.400
S.China	0.378	0.400	0.347	0.261	0.261	0.200
Malaya	0.313	0.320	0.471	0.526	0.421	0.533
Assam	0.450	0.364	0.231	0.385	0.231	0.261
N.W.India	0.182	0.230	0.315	0.211	0.211	0.250
Sikkim	0.322	0.416	0.235	0.471	0.471	0.428
S.W.China	0.254	0.250	0.146	0.146	0.098	0.053
Taiwan	0.228	0.214	0.286	0.191	0.191	0.111
Nepal	0.256	0.313	0.160	0.240	0.240	0.272
Sumatra	0.193	0.166	0.235	0.235	0.235	0.286
Java	0.182	0.154	0.105	0.211	0.316	0.375
Celebes	0.063	0.000	0.000	0.000	0.105	0.000
Borneo	0.071	0.095	0.143	0.143	0.143	0.182
Philippines	0.138	0.091	0.133	0.067	0.267	0.166

community from Vietnam and those from adjacent countries such as Laos, Thailand and Burma (Table 2). More diverse high-mountain communities in W. and S.W. China and the Himalayas are characterized by high levels of distinctiveness and low similarity to Vietnam generally though with some greater similarity to mountainous areas of northern and central Vietnam. At the same time, relatively undiverse communities of southern regions of Vietnam display a similarity to the fauna of the Malay Peninsula and the Sunda Islands, where the low *Ypthima* diversity is also characteristic. There is also a similar rather weak link between the *Ypthima* fauna of Vietnam and parts of the Oriental regions such as Southeast China and Taiwan.

Maps for the distributions of Vietnamese *Ypthima* are shown in Figure 11. These maps display a rather distinct northern border for the genus distribution in general. All areas for the distribution of Vietnamese species lie to the south of a hypothetical line from Taiwan to Sichuan. There are clear visible northwestern and western borders which are inward to the continent for one group of species (*sakra* (1), *persimilis* (3), *confusa* (21), *similis* (8), *savara* (6)) and outward to the ocean for another group of species (*praenubila* (17), *tappana* (10), *imitans* (22)). The distributional border for the majority of species of the *sakra*-group is marginal on the Asian mainland. For the majority of species belonging to the *philomela*-group (*baldus* (11), *nebulosa* (13), *philomela* (14), *lisandra* (15)) Vietnam is the transitional zone connecting the South-East Asia mainland to the Sunda Islands.

Restricted-range and isolated species and race populations are mainly found in Vietnam (*frontierii* (19) *sarcaposa* (20), *pseudosavara* (7), *daclaca* (24), *norma annamitica* (16c), *watsoni inouei* (23c)).

This category of species comprises nearly 30% of the total number of *Ypthima* species in Vietnam. This percentage characterizes a high endemism level of *Ypthima* species in Vietnam.

It can be seen that the *Ypthima* fauna of Vietnam is characterized as transitional, joining southern butterfly communities of Malaya, Indo-China and the Sunda Islands to northern communities of the Himalayas and western China; and nearly one third of all *Ypthima* species in Vietnam are endemic.

Relatively high levels of *Ypthima* diversity (24 species) and endemism (30%) may be explained by the unique geographical position of the country in comparison with other areas of Oriental region. MANI (1986) notes that in spite of the high level of Himalaya isolation the number of butterfly endemic species is relatively low (2%) and the endemic genera are nearly absent. The same situation can be seen on the Malay Peninsula where butterfly endemic species are counted at not more than 2% of the total number of species (ELIOT, in CORBET and PENDLEBURY, 1992). A similar pattern may be observed in the Indo-Chinese Peninsula, particularly in Vietnam, where endemic genera are absent though the level of endemic species and subspecies is relatively high. The high proportion of species endemism has a Tertiary origin. Endemism was established during the sea regression

Table 3. Examples of similarity between areas for endemic birds and butterfly distribution in Vietnam.

Region (Stattersfield <i>et al.</i> , 1998)	Bird endemics (Tordoff <i>et al.</i> , 2003)	Butterfly endemics
South-East Chinese Mountains	<i>G.magnificus</i>	<i>Ypthima frontierii</i> <i>Lethe phileanoides</i> <i>Lethe philemon</i> <i>Papilio prexaspes intricatus</i> <i>Calinaga funeralis</i> <i>Celaenorrhinus phuongi</i> <i>C.inexpectus</i> <i>Scobura eximia</i> <i>Pintara bowringi</i> <i>Sovia eminens</i>
Annamese Lowlands	<i>Arborophila merlini</i> <i>Lophura imperialis</i> <i>Lophura hatinhensis</i> <i>Lophura edwardsi</i> <i>Stachyris herberti</i>	<i>Ypthima pseudosavara</i> <i>Stichophthalma louisa eamesi</i> <i>Pintara capiloides</i> <i>Celaenorrhinus kuznetsovi</i>
Kon Tum Plateau	<i>Garrulax ngoclinhensis</i> <i>Garrulax konkakinhensis</i> <i>Actinodura sodangorum</i>	<i>Delias vietnamensis</i> <i>Stichophthalma uemurai</i> <i>Aemonia kontumei</i> <i>Aemonia simulatrix</i> <i>Dodona katerina</i> <i>Heliophorus smaragdinus</i> <i>Dodona speciosa</i> <i>Lethe konkakini</i>
Da Lat Plateau	<i>Garrulax yersini</i> <i>Crocias langbianis</i> <i>Carduelis monguilloti</i>	<i>Ypthima daclaca</i> <i>Chilasa imitata</i> <i>Delias vietnamensis</i> <i>Delias belladonna endoi</i> <i>Stichophthalma uemurai</i> <i>Dodona speciosa</i>
South Vietnamese Lowlands	<i>Arborophila davidi</i> <i>Polyplecron germaini</i>	<i>Ypthima watsoni inouei</i> <i>Discophora aestheta</i>

when most of the Sunda Islands, Taiwan and Hainan were joined to the mainland (VORONOV *et al.*, 2002 ; RAINBOTH, 1996). At present endemic butterfly fauna of Vietnam comprise approximately 3% of the total number of known butterfly taxa. Their concentration is highest in the Central Highlands (Kon Tum, Gia Lai, Dac Lac and Lam Dong provinces) and also high in adjacent areas of the coastal lowland and Northeast Vietnam. It is possible to surmise that the value of endemism in Vietnam should be higher. However, it cannot be estimated precisely because the majority of natural lowland habitats are degraded and depopulated.

Nevertheless, some butterfly endemics have recently been discovered in remaining lowland forest fragments at sites such as Cat Tien, Bach Ma, Hon Ba, Phong Dien and Ben En protected areas ; for example, *Ypthima pseudosavara*, *Y. daclaca*, *Y. watsoni inouei*, *Y. norma annamitica*, *Stichophthalma louisa eamesi*, *S. uemurai*, *Zeuxidia sapphirus*, *Discophora aestheta*, *Pintara capiloides*.

The endemism level among *Ypthima* and other taxonomic groups of the Rhopalocera is only a modest confir-

mation of Eastern Indo-Chinese geographical isolation, the main proof of which is the complex of endemic vertebrates belonging to mammals, birds, reptiles and amphibians. In particular, distribution of the endemic butterfly species coincides with five endemic bird regions (TORDOFF *et al.*, 2003) (Table 3).

It is possible that during post-glacial warming and sea expansion the range of many butterfly species has become fragmented. This can be seen in vast areas from the Himalayas to central China and Indo-China, including Vietnam. Examples include such species as *Y. sakra*, *Y. dohertyi*, *Y. lisandra*, *Y. norma*, *Y. watsoni*, *Y. sarcaposa* and *Y. tapana*, the Vietnamese populations of which bear distinctive race characteristics.

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